

Durham E-Theses

*The social life of seeds:an ethnographic exploration of
farming knowledge in Kibtya of Amhara region,
Ethiopia*

YELEMTU, FASSIL, GEBEYEHU

How to cite:

YELEMTU, FASSIL, GEBEYEHU (2014) *The social life of seeds:an ethnographic exploration of farming knowledge in Kibtya of Amhara region, Ethiopia*, Durham theses, Durham University. Available at Durham E-Theses Online: <http://etheses.dur.ac.uk/10565/>

Use policy

The full-text may be used and/or reproduced, and given to third parties in any format or medium, without prior permission or charge, for personal research or study, educational, or not-for-profit purposes provided that:

- a full bibliographic reference is made to the original source
- a [link](#) is made to the metadata record in Durham E-Theses
- the full-text is not changed in any way

The full-text must not be sold in any format or medium without the formal permission of the copyright holders.

Please consult the [full Durham E-Theses policy](#) for further details.

Academic Support Office, Durham University, University Office, Old Elvet, Durham DH1 3HP
e-mail: e-theses.admin@dur.ac.uk Tel: +44 0191 334 6107
<http://etheses.dur.ac.uk>

The social life of seeds: an ethnographic exploration of farming
knowledge in Kibtya of Amhara region, Ethiopia

Fassil Gebeyehu Yelemtu

A thesis submitted for the degree of Doctor of Philosophy in Anthropology

Department of Anthropology

Durham University

Dr Thomas Yarrow, Supervisor

Dr Ben Campbell, Supervisor

2014

Abstract

The intrinsic relationship and interaction between Farmers Seeds (FSs) and smallholder farmers have long been developed for many centuries so that farmers have acquired various forms of experiential knowledge about seed management and associated farming practices. FSs are often associated with their infra-specific diversity in which smallholder farmers are using them to meet their socio-cultural and economic needs in a range of agro-ecological zones.

However, introduction of new seeds such as High Yielding Varieties (HYVs) increasingly threaten knowledge and practices related to the cultivation of FSs. This study investigates different local meanings, uses and understandings of seeds and the process by which these understandings are learned. Drawing on ethnographic research in Kibtya and contextualizing this in relation to wider contexts, the thesis argues that perception towards seeds and productivity is not limited to narrowly economic evaluations; rather, it is intimately intertwined within a range of socio-cultural activities and farming practices and is consequently valued in a range of different ways. A central argument of the thesis is that farming knowledge is situated in people's day-to-day interaction with one another and with the physical environments in which they work. It is not reducible to a system in the form of books or other forms of documents.

The thesis also develops insights of relevance to a range of policy and practitioner audiences. The study analyses the causes and consequences of ignorance on the socio-cultural aspects of smallholder farmers' knowledge and the corresponding limitations of agricultural intervention programmes and associated policy approaches towards development. Thus, this thesis presents new findings which, it is hoped, will help governments and non-governmental organizations (NGOs) to plan appropriate intervention programmes in which outside actors would be involved into an on-going socially constructed and negotiated process.

Table of Contents

List of illustrations	vi
Tables	viii
List of abbreviations	ix
List of terminology	xi
Preface	xiii
Acknowledgements	xx
Chapter 1: Introduction	1
Introduction	1
Research methods	9
Data analysis	14
Chapter 2: Kibtya in context	16
Introduction	16
The study site	19
Agricultural seasons	20
Smallholder farming and livestock management in context	22
Demographic context	24
Socio-economic context	25
Political context	26
Conclusion	28
Chapter 3: Past and present perspectives on land tenure	30
Introduction	30
History of land tenure in Ethiopia and the broader context	31
Amhara social structure in relation to land	33
The pre-1975 land tenure and rural life of Amhara people	34
The complex nature of the <i>rist</i> system	36
The role of <i>rist</i> tenure in maintaining kinship across different communities	37
The <i>rist</i> tenure system in the context of Kibtya	38
The 1975 land reform and its impact on power and social relations	40
Land reform after 1991 and its effect on the contemporary context	43
Land certification as means of tenure security and its effect in Amhara region	45
Contemporary perspectives on previous land tenure systems	47
The current land use in Kibtya	50

Challenges of the current land tenure in Kibtya.....	52
Contested view of Kibtya farmers on the current and traditional <i>rist</i> land tenure	53
Conclusion	58
Chapter 4: Smallholder agriculture and the impact of intervention in Kibtya community	60
Introduction.....	60
The role of agriculture in economic growth for the poor.....	61
Ethiopian agriculture.....	66
Historical perspectives	67
Ethiopian agricultural policy and rural development plans since 1991	68
The challenge of adaptation with the government's development plans in Kibtya	69
Government intervention and its overall impact on Kibtya's smallholder agriculture	73
The complex relationship between DAs and farmers and its impact on agricultural productivity ...	75
The challenge of promotion of fertilizer and its impact in Kibtya.....	82
Conclusion	86
Chapter 5: Farmers' seed knowledge.....	90
Introduction.....	90
Knowledge in perspective.....	91
Local knowledge and its contested meanings	92
How do farmers acquire knowledge?.....	94
Farmers' knowledge of seeds in Kibtya.....	99
Seed diversities and farmers' associated knowledge	107
Farmers' seed selection to maintain pure breeds	113
Farmers' seed selection to decide priority	115
Women's knowledge	118
Interaction between school education and experiential learning and its impact in Kibtya	120
Conclusion	122
Chapter 6: Perception and use of different forms of seeds in Kibtya	125
Introduction.....	125
Debating Farmers' Seeds and High Yielding Varieties	127
Use of different types of seeds in Kibtya.....	132
Varied perceptions and interpretations of HYVs and FSs in Kibtya	136
Contested views of Tradition and Modernity	137
Seed Diversity	139
HYVs and politics.....	145

Reconsidering the seed debate from the perspective of Kibtya	147
Conclusion	150
Chapter 7: The interplay of seeds, social life, and institutions	153
Introduction.....	153
Non-farm activities and their impact on socio-cultural change and seed management in Kibtya	154
Rural household as an institution in subsistence farming economy.....	157
Reciprocity of seeds and various forms of institutions in Kibtya	164
The interplay of everyday task and seed management in different contexts of various social institutions.....	166
<i>Agmas</i> social institution	166
<i>Debo</i> social institution	167
Wedding (<i>serg</i>) social institution.....	171
Mourning social institution	174
<i>Duaa</i> (traditional prayer) social institution.....	175
The role of seeds in the process of reconciliation	177
Emergence of new institutions and their interaction with the existing socio-cultural and farming settings	177
Conclusion	180
Chapter 8: Conclusion.....	182
Towards a situated understanding of seed knowledge	182
Questioning economic productivity	185

List of illustrations

Figures

- Figure 2.1:** The location of Amhara region and the study site in Ethiopia.....18
- Figure 2.2:** Distribution of Amhara region's administrative zones in which Mekdella wereda (study site highlighted in red) is located within South-Wollo zone.....18
- Figure 2.3:** Location of the study site as compared to other kebeles in Mekdella wereda..19
- Figure 3.1:** Photos taken within Kibtya fieldwork areas showing various forms of landscape and different views of farmlands in Kibtya. Clockwise from the upper left-hand corner: Little girl following (rearing) animals on the degraded landscape near to bean farm; a farmer ploughing his land as part of preparation to sow relevant crops when rain falls; typical farmland showing its feature right after harvesting; typical farmland showing wheat crop a little bit early before maturity.....51
- Figure 4.1:** Government strategy of linking agricultural and industrial sectors.....69
- Figure 4.2:** Photos taken within Kibtya fieldwork areas comparing the effect of wheat crop disease (Yellow fungus) on Farmers' Seeds (FSs) and newly introduced High Yielding Varieties (HYVs). The upper photo shows the field with the surviving FS (black wheat) while the lower photo shows the new wheat variety threatened by the Yellow fungus.....77
- Figure 5.1:** Photos taken during Identification (ID) exercise within fieldwork area of Kibtya showing farmers identifying different forms of seeds. Clockwise from the upper left-hand side: A woman farmer identifying seeds by colour and shape of kernel (the far side of the small table shows crops before being split from the spike); a student (male) identifying seeds by shape and colour; a farmer identifying seeds by appearance before being split from the straw; a student (female) identifying seeds by shape and colour.....113
- Figure 6.1:** Photos taken within Kibtya fieldwork areas. Left: a farmer uprooting wheat straw for roofing; right: a close-up view of wheat straw (without heads/kernels) which is used for roofing.....135
- Figure 7.1:** Typical homestead in Kibtya.....159
- Figure 7.2:** Photos taken in the nearby area of the study area (Kibtya) during market day. From the upper and lower left-hand side: women selling and buying various forms of seeds in the local market; the upper right-hand side showing close-up view of women selling grains in small amounts to get cash for buying supplemental goods; the lower right-hand side showing men also involved in exchanging seeds for cash at the local market.....162

Figure 7.3: Photos taken within Kibtya fieldwork areas showing farmers’ social work. From left to right farmers cutting fodder grass; group of farmers served drinks under social institution (<i>debo</i>) while others keep working.....	169
Figure 7.4: Photos taken within fieldwork area of Kibtya showing feast under wedding social institution. From left to right: a farmer serving guests seating in lines; group of guests seating according to special arrangement (<i>awraj</i>).....	172

Tables

Table 2.1: Population data and distribution of human resources in Kibtya community.....	24
Table 3.1: Total area and land use practice of Kibtya area.....	52
Table 3.2: Chronological summary of land tenure in Ethiopia.....	57
Table 4.1: Ethiopian highlands agro-ecological zones and area coverage.....	66
Table 4.2: Structural feature, and production system of smallholder agriculture in less favoured areas (LFAs).....	72
Table 5.1: Freelist matrix listing salient crops in Kibtya.....	101
Table 5.2: Farmers' seed identification exercise – within the same species of crops.....	111
Table 6.1: Common seeds identified in Kibty.....	142

List of abbreviations

ALDI – Agricultural-led Development Industrialization	60
AEFA – All Ethiopia’s Farmers Associations	41
ANDM – Amhara National Democratic Movement.....	46
AP – Agro-Pastoral.....	66
ATA – Agricultural Transformation Agency.....	185
BBM – Broad Bed Marker.....	26
BoARD – Bureau of Agriculture and Rural Development.....	164
BYDV – Barley Yellow Dwarf Virus.....	140
CB – Cultural Biodiversity.....	xi
DA – Development Agents.....	xxi
DGDP – Dairy Goat Development Programme.....	23
EOSA – Ethio-Organic Seed Action.....	8
EPLAUA – Environmental Protection Land Use and Administration Authority.....	46
EPRDF – Ethiopian People’s Revolutionary Democratic Front.....	43
FDRE – Federal Democratic Republic of Ethiopia.....	43
FSs – Farmers’ Seeds.....	xviii
FTC – Farmer Training Centres.....	178
GDP – Gross Domestic Product.....	61
GM – Genetic Modification.....	129
HPC – High Potential Cereal Zone.....	66
HPP – High Potential Perennial Zone.....	66
HYVs – High Yielding Varieties.....	xiv
ID – Identification.....	14
IK – Indigenous Knowledge.....	90
ISD – Institute for Sustainable Development.....	xiv
LFAs – Less Favoured Areas.....	71
LPC – Low Potential Cereal Zone	66
MP – Member of Parliament.....	84
OPVs – Open Pollinated Varieties.....	77
PAs – Peasant Associations	67
PASDEP – Plan for Accelerated and Sustained Development to End Poverty.....	68

PCs – Producers Co-operatives.....	67
PMAC – Provisional Military Administrative Council.....	41
R&D – Research and Development.....	146
SCs –Service Co-operatives.....	67
SDPRP – Sustainable Development and Poverty Reduction Program.....	68
SOS/I – Seeds of Survival/International.....	8
SRI – System Rice Intensification.....	187
SWI – System Wheat Intensification.....	187

List of terminology

Term	Meaning
Arash	Farmer
Awraj	Traditional seating arrangement to serve people (guests) at feasts (often at weddings)
Ayema	The second phase of ploughing land within a particular harvesting year (a subsequent ploughing after the preceding harvest is completed)
Belg	The second rainy season often in March–June
Buagach	Beggar (the term traditionally used to refer those who beg at crop threshing sites)
Chesegna	Landless tenant
Dem-mafses	Ritual practice to cure illness caused by possession of spirit
Dirashot	Any type of fast maturing crop
Erf	A long wooden lever attached with the sharp metallic plough to control the making of seed beds
Ertiban	Traditional social institution in which people would be compensated for their lost items/properties
Gala-Meret	Traditional land right acquired by encroachment or granted by government (interchangeably used with gult)
Gebar	Government tax payer (particularly in the traditional rist land tenure system)
Gebar-Meret	Traditional inheritable land right (interchangeably used with riste-gult)
Gemesa	The first phase of ploughing land for a particular year after completion of the previous harvest
Got	Smallest political administrative unit next lower to Ketena
Gult	Traditional land use right granted by the will of the monarch or provincial rulers
Ikub	Traditional social financial savings institution
Kebele	Political administrative area next lower to Wereda
Ketena	Political administrative area next lower to Kebele
Kire	Traditional institution in which farmers get social help when they have lost someone from their family
Maderia-gult (netela-gult)	Traditional land use right granted by landlords in which tenants used to plough lands while paying tributes. Such land use right is supposed to be used only for the lifetime of the tenant (not to be inherited)
Maresha	Metallic plough
Meher	The main rainy season, often in June–September
Mesno	Traditional irrigation
Nedo	A bunch of harvested crops tied together (often a handful size)
Rist	Traditional land use right acquired based on heredity under certain lineage
Ristegna (bale-rist)	The owner of inheritable <i>rist</i> land
Riste-gult	Traditional dual land use right in which one may acquire <i>rist</i> as

	well as <i>gult</i> land rights through heredity and will of provincial rulers consecutively
Samon	Traditional land use right granted by government to religious institutions (particularly the Ethiopian Orthodox Church)
Shengo	Council of elders who often resolve conflicts
Shimagle	Old person
Shonat	One of the ritual practices to cure illness caused by possession by a spirit
Werash	A person who has the right of inheritance from his/her parents
Wereda	Political administrative area which is equivalent to a district

Preface

The themes at the heart of this PhD arise out of longstanding interests. For the past 10 years (2002–2011), I worked for a non-governmental organization (NGO) called the Institute for Sustainable Development (ISD). My main responsibility was coordinator of a project known as ‘Discovering the Value of Cultural Biodiversity’ (CB), working with 17¹ high-school environment clubs and the communities around them in various parts of Ethiopia. Kibtya community where this research was carried out is one of those communities in which ISD runs the CB project. As project coordinator, I had a number of opportunities to observe firsthand a wide range of cultural practices in relation to seed management and farming, where applications of such practices are characterized by complex interactions amongst farmers as well as between the community and external agents. These experiences motivated me to carry out PhD research with the aim of understanding seeds and associated farming knowledge. Developing from this experience, key issues which are addressed by this thesis are, therefore, farmers’ perception and management of seeds and the impacts of external intervention in relation to the newly introduced High Yielding Varieties (HYVs) on the mechanism by which these understandings are learned under the contemporary socio-cultural and political contexts.

I used an inductive ethnographic approach and my fieldwork ran from September 2011 to July 2012. Kibtya, the focus of the study, is located in close proximity to my home community, known as Koreb. I therefore have close personal identity and share some common understandings in relation to some of the cultural norms and practices I explore. As with all ethnographic research, I derive understanding of the field I examine, through my own engagement with specific people and events. As such, the ethnographic material I have been given access to, necessarily reflects my own identity. As somebody familiar with many of the social and cultural norms in this community, I was often treated as an ‘insider’. However, my personal identity, as a person who belongs to the same ethnic group and born in the nearby community, was not an absolute solution in terms of a smooth entry into Kibtya community. Most farmers associated my presence in Kibtya with the government and thought I could leak information to the government so that anyone who speaks against it could be targeted. Their

¹ Now the number of schools has grown to 22.

perception could also be related to my identity as a ‘modern’ person who comes from the city, so they would not be comfortable sharing all their own affairs.

During the process of research, I was led by my research objectives, which framed the kinds of questions I asked, and the ethnographic contexts I chose to focus on. However, as is common with qualitative research, the contexts, events and people I encountered helped to iteratively refine and define the issues at the heart of the study. Thus I made a methodological virtue of serendipity, being led to a large extent by the contexts I was able to gain access to and being alert to issues and practices that people themselves regarded as important.

In the first couple of months (September and October 2011), I focused on acquiring an understanding of the general context and getting to know some farmers suggested by my key informants. My key informants and I then identified 29 potential farmers of both sexes who are experienced in various aspects of seeds and farming with associated experiential knowledge. This led me to carry out non-participant observation and informal interviews (between November and December 2011) with some of these farmers for several days in order to build a sound relationship and trust before the start of using technical qualitative tools, such as interviews and recording. After the end of December and as time passed, I gradually gained confidence and managed to participate, eat with and discuss some formal issues with farmers of different age groups and gender. This approach using the inductive ethnographic method then made me interested in matching the socio-cultural issues of Kibtya community, their knowledge systems, life ways and farming activities with my research objectives.

In addition to extensive consultation with various people, I selected my key informants based on a mixed approach including my prior knowledge (gained through previous work), recommendations by farmers whom I had already met, and social activities in which I had taken part. There was no absolute situation where I stuck with only one or two persons on whom I depended as key informants; rather, I took several turns between households and individuals through which I developed relationships with people to a greater or a lesser degree. In the first two weeks, a few of my key informants were very active in facilitating communication with people so that I got to know a considerable number of farmers within a fairly short period of time. Once I got to know one or two farmers, I managed to get closer

and maintain sound communication with them, thus linking with a wider network through participation in day-to-day work and social gatherings. The role of my key informants then shifted to helping me in cross-checking information I gathered on a daily basis rather than taking me somewhere to meet with someone. This approach of getting into a more interactive situation and becoming familiar with socio-cultural and other contexts helped me iteratively re-define key questions and issues for exploration.

These times of introduction were very significant for the entire ethnographic data collection because farmers invited me into their homes, introducing me to their families and familiarizing me with the local context. I used these opportunities to maintain my relationships, carry out observations and discussions at deeper levels with students, women and children as I was allowed to come and go into respective homes. For example, one of my informants invited me to his home and introduced me to his wife and three children while having lunch together. Such opportunities created the opportunity for me to talk to children which was the beginning of discovering more information in terms of getting to know about students and their relationship with parents and other people outside the community. This was the first impression I received from discussions with all family members together. Since then I was accepted as a friend of the family so that I returned to their home a number of times throughout my ethnographic fieldwork.

Similarly, another farmer invited me to his home and introduced me to his wife and all his family members. His daughter is pursuing her education in health science in Dessie town which is located some 150 km from Kibtya. I took this opportunity to talk to her as she was leaving the next day. Our conversation focused on her life history, particularly to what extent she knows about agriculture, how she acquired farming knowledge from her parents and how different sources of knowledge influence her lifestyle. I adopted a similar pattern of getting to know many other families, whereby most people, particularly in ‘*Abichu got*’² and ‘*Aba-geto got*’,³ got to know me and my purpose in Kibtya.

² There are three sub-areas (*gots*) in Kibtya (see details in Chapter 1) and ‘*abichu-got*’ is one of the sub-areas in which most of my ethnographic research was carried out.

³ ‘*Aba-geto-got*’ is also one of the suburban sub-areas of Kibtya.

Each occasion of getting to know farmers or any given event to which I was invited was likely to bring lessons and inspiration in terms of reframing my approach and getting to know people better, understanding communication style, acceptable or unacceptable behaviour, cultural norms as well as convenient times to meet farmers. For example, one day my key informants suggested that I talk to an old farmer (70) as he is knowledgeable about farming and seeds as well as the historical perspectives of land tenure. They took me to meet with him but he was not at home. His wife told us he was rearing his cattle and would return by mid-day. My key informants told me that every farmer was supposed to get back home at mid-day. The mid-day break is known locally as *ware*. Farmers often stay for about 2 hours (from 1 to 3 p.m.) while the sunlight is strong. Their children also come home with their cattle to take a *ware* break. I thus learned that if I wanted to meet the whole family together, I should go to their home by the mid-day (*ware*) break or in the evening. This same old farmer told the story of *ware* in relation to deforestation and the weather changes he observed through time. The farmer told me that there had been a number of big acacia trees about 30–40 years back, so that animals used to be able to stay the whole day in fields as they used to go back and forth between the shade and grazing fields. Nowadays, however, animals have to return home by mid-day (to get shade and rest) because there is no shade in the grazing fields (all the trees have been cut down either for firewood or for house construction) and the power of the sun is very strong at mid-day.

On another occasion, my key informants took me to a widowed farmer. When we arrived she was busy preparing cow dung for cooking. My key informants introduced me to her and I explained my purpose as I did in other places. She expressed her willingness to share what she knows and welcomed me to visit her house whenever necessary, so that I could observe how she and her family are living on a day-to-day basis. We had a brief discussion in which she explained details of the daily activities and priorities of seasonal works. She often wakes up very early in the morning to cook food for the family. Then, she sends her children to school or to rear animals. At the time we spoke, October, the priority for her is to harvest those crops ready to be collected. She told me that some crops such as pea, beans and lentils need to be harvested very early in the morning while there is moisture. Seeds of the mentioned crops will be dispersed/spread throughout the field (due to too dry conditions) otherwise. She also told how she is interested in growing different seed varieties to fulfil her needs for cooking, preferred flavour, better storing characteristics and preferred weed and

pest-resisting capabilities. In general, she provided me with a picture of how women are involved in both household and outdoor activities, which inspired me to explore women's role in farming life, handling of resources and related issues.

This demonstrates how the inductive ethnographic approach I used in my research unfolded through interactions with a number of informants, in which seeing and talking with them led me to several issues that were central to their lives. Often the most important insights only emerged once I had got to know people well. Further, such ethnographic fieldwork experience demonstrates that over time I built trust and relationships that gave me access to a detailed and nuanced understanding of a range of social and cultural issues that would not otherwise have been possible.

The thesis is organized into eight chapters. These chapters are generally categorized into two broader parts. Following the introductory and context chapters, the next two chapters (Chapters 3 and 4) explore the relationships of the studied community to land and agriculture through how external intervention is impacting contemporary farming livelihoods in Kibtya. The subsequent three chapters (Chapters 5, 6 and 7) are focused on understanding the problems and benefits of Farmers' Seeds (FSs), in relation to the introduction of HYVs and the process by which these understandings are learned and translated into the acquisition and use of local knowledge. The concluding chapter discusses and summarizes the main findings.

The Social Life of seeds: an ethnographic exploration of farming
knowledge in Kibtya of Amhara Region, Ethiopia

Copyright © 2014

Fassil Gebeyehu Yelemtu

All Rights Reserved

The copyright of this thesis rests with the author. No quotation from it should
be published without the author's prior written consent and information derived
from it should be acknowledged

Acknowledgements

First of all, I thank the Almighty God who has provided me with passion and strength all the way throughout my PhD journey. Three long years with the usual lots of ups and downs have passed since I was involved in this research project. The process of such challenging research has been interesting because of the kindness, conviction, support, availability, and guidance of the following individuals and institutions.

Obviously my first thanks go to my two PhD supervisors at the University of Durham: Dr Thomas Yarrow and Dr Ben Campbell. Dr Thomas Yarrow in particular has unreservedly guided me throughout the long and challenging intellectual journey which required polishing a rough idea into a structured PhD thesis. A huge amount of thanks, actually many thousands of thanks, are paid to The Christensen Fund for full-time funding as this PhD project would not have been possible without such generous support. My special thanks and gratitude go to Dr Tadesse W/Gossa for his encouragement and professional advice whenever I met him physically or via telephone conversation.

I am indebted by the heartfelt and kind support from Liz Hosken and Ed Possey who always make me feel at home whenever I go to their place (the Gaia house) in London. Many more thanks to Liz Hosken for her special attention and support in terms of taking care of my health and filling any sorts of logistical and financial gaps. I thank Dr Million Belay as he assisted me in various stages of this research project in terms of conceptual development and professional advice. I would also like to thank all staff members in ISD and MELCA for their encouragement and support whenever I needed it. My heartfelt appreciation and gratitude go to Sue Edwards and Ato Tamrat Kebede for granting me space and other facilities in their respective organizations while I was in the field for data collection.

I am particularly grateful to Dr Desalegne Desissa who keeps in contact, encourages and offers professional support in making maps using Arc-GIS. I am also grateful to my siblings S/r Seblewongel Gebyehu, Ato Leul-seged Gebeyehu, Ato Solomon Gebeyehu and my extended family, friends and colleagues who provide unreserved support for my family while I am away. I am particularly grateful to my best friend and colleague, Ato Fikadu Asefa for his full commitment to take care of my family in my absence. My special thanks go to Jim

Coxen and Simone Lemmer (office mates) who proof read my thesis and help in drawing respectively. My other office mates also deserve many thanks for their friendly support and good will. I also thank Dr Aurang Zeb Mughal for his continuous advice and consultation.

This project would not have been possible if all the villagers of Kibtya had not welcomed me into their place and their homes and took me along to the field. My particular gratitude and appreciation go to the following farmers: Ato Seidu Assen, W/o Maritu Kebab, Ato Shikur Seid, Ato Ali Seid, Ato Tadesse Fantaye, W/o Tsehaynesh Yimer, W/o Birke Yimer, Sheck Nuru Molla, W/o Fatima Husen, Ato Damtew Abate, W/o Tiruwork Ahmed, Ato Tamene Mengistu, W/o Yeshe Misganaw, Ato Mekuriaw Eshetu, Ato Misaw Guale, W/o Birtukan Yimer, W/t Aynadis Misaw, and Ato Alemu Beyene. I also thank all the villagers of Kibtya of all ages and gender who accompanied my research activities and provided the necessary support throughout the entire ethnographic fieldwork. I am grateful to all the people I met on various occasions and interacted with, including people from Yesor village as their kindness and sympathy were essential in terms of making me feel at home.

I am grateful to authorities and staff members from the office of administration as well as the Agriculture and Rural Development bureau in Mekdella wereda including: Ato Zewdu Yimer and Ato Anwar Abdela. My special thanks go to Ato Misganaw Kelemework for his valuable support in collecting the primary data using GPS and initial stage of map making. I thank all Development Agents (DAs) in Mekdella wereda for their cooperation in providing information and my special thanks go to Ato Hussen Mohammed for his extended time and valuable information during the course of my ethnographic fieldwork. I thank my field assistants in Kibtya, with whom I have spent significant time during the fieldwork and in the process of typing and transcribing research data. I am particularly grateful to Ato Fire-Egzi, Ato Alebachew, Ato Sebsibe, Ato Tilahun Yimer, and w/t Sabela Yohannes.

My special thanks and gratitude go to all teachers of Kibtya elementary school and Masha high school who were involved in the research process including directors of respective schools, W/o Lubaba and Ato Alebachew Mamo. I am also grateful to Ato Asen Godana and his wife W/o Macha for their heartfelt hospitality and generosity when I stay at their home during the entire field work. My appreciation go to Ato Yohannes Demissie, W/o Fikir

Ketema, Ato Takele Mohammed and W/o Meseret Misganaw for their kind support in logistics and hospitality.

Finally, I would like to thank my beloved family for their patience and for keeping their nerves in check throughout this research project. Much love goes to my wife Emebet Demissie for her passion and strength in managing routine life, alone, and taking care of our children. My heartfelt thanks also go to my children Tekuam Fassil, Gebeyehu Fassil, and Gelilla Fassil for their patience and understanding in my absence for such a long time.

Chapter 1: Introduction

Introduction

This study is primarily about local meanings, uses and understandings of seeds and the process by which these understandings are learned. Aiming to produce a contextual understanding of these processes, the thesis necessarily touches on a wide range of issues. However the study is centrally concerned with the perceived problems and benefits of Farmers' Seeds (FSs) in relation to the newly introduced seeds known as High Yielding Varieties (HYVs). In order to approach these complex issues, the study builds on a range of comparative empirical accounts and draws conceptual underpinnings from literatures in anthropology and cognate disciplines.

Anthropologists have long been interested in food and its sources and they have been making a significant contribution to the on-going research endeavour to ensure sustainable agricultural productivity under changing socio-cultural, economic, political and environmental contexts. This research draws centrally on anthropological work that highlights the inextricable link between people and the environment (Ingold, 2000; Croll and Parkin, 2002), taking particular inspiration from scholars that highlights the limits of understandings of knowledge as abstract, symbolic systems. Building on this work, I approach agriculture as a sphere in which people undertake activities that are partly shaped by social and cultural contexts, but which in turn modify these in relation to specific situations and practices. From this perspective, the knowledge of farmers is situational and contextual, inhering in specific forms of practice and relationship, rather than an overarching system. The thesis builds on related approaches that highlight how the physical aspects of farming practices relates to more abstract forms of custom in daily life (Mallery, 1888); on work focusing on the central role of food in processes of socialization (Smith, 1894; Douglas, 2003); and on the significant role and productive capacity of agriculture in developing social formation (Berger, 1992). More specifically my approach is centrally informed by a growing body of interdisciplinary research on the values, perceptions and meanings of seeds (Ingold, 1995, 2000; Shiva, 2001; Croll and Parkin, 2002; Bellon, 2004; Brush, 2004; McGuire, 2008).

My engagement with these literatures brings into focus a range of issues and questions related to farming practices and associated knowledge on seeds. In particular I explore the relationship between *what* farmers know and *how* they know. This focus on knowledge as practical and situated, relates to a contextual concern with the ways in which ideas, beliefs and values are differentially held by different members of the community. These issues are examined in relation to Kibtya, the study community, where detailed ethnographic research was undertaken over nine months.

A growing body of research on agriculture approaches this from the perspective of ‘indigenous knowledge’. Methodologically this often involves the use of PRA approaches in which external agents go into the given community and provide space to local people to speak, to map their problems and in general to lead the process. Such approaches usefully highlight the importance of local knowledge and understandings that are often marginalised within mainstream development. However this process of research entails forms of systematisation that result in a view of this knowledge as a coherent bounded system. Building on work by Suchman (1987); Skelton and Allen, (1999); Ingold,(2000; and others (see detail in Chapter 5). I suggest that this mitigates against a nuanced appreciation of the practical and situated nature of much local knowledge relating to farming and seeds. Indeed, many of my own informants were reluctant to describe their practices relating to farming and seeds as ‘knowledge’. For them, it was simply a taken for granted aspect of life, embedded in forms of routine, practice and behaviour and in everyday social contexts that were largely taken for granted. Thus my research emphasizes that such knowledge is not like textual knowledge that is abstract, codified and systemic. Rather, it is important to appreciate how such knowledge is woven into everyday aspects of life, as part of interactions between farmers and the environments they work in, in a range of social contexts. In order to understand and describe these kinds of knowledge, an ethnographic approach is useful. Unlike PRA and survey-based methodologies, this enables in-depth contextual understanding of how people think and act in a range of everyday situations.

Drawing on ethnographic research in Kibtya and contextualizing the multitudinous use of seeds in relation to wider contexts, this thesis aims to advance academic understanding of the socio-cultural significance of seeds and associated farming knowledge. While many of the practices and beliefs outlined are specific to the study area, my account highlights a range of

dynamics of broader comparative relevance. In particular, the thesis reveals the dynamic and practical nature of much knowledge pertaining to seeds. It also highlights the importance of understanding seeds as embedded in and constitutive of various kinds of social relations. It is hoped that by providing a detailed, contextual account of the various ways in which seeds become locally meaningful, these understandings will in turn enable more culturally sensitive development projects pertaining to these issues.

The title of the thesis is inspired by the work of Kopytoff (1986), and extends his concept of ‘the social life of things’, to seed. In his work on the ‘social life of things’, Kopytoff reveals the significance of understanding the biography of a particular thing by drawing different perspectives and asking relevant questions such as ‘what, sociologically, are the biographical possibilities inherent in a particular thing’s “status” and in the period and culture, and how are these possibilities realized?, where does the thing come from and who made it?’ (1986: 66). This implies that things are cultivated in ways that involve tasks and bring people together with sources of knowledge and tradition. This perspective highlights the intrinsic relationship between physical and social aspects of seed management, including how exchanging of resources, sharing of information and knowledge about seeds and different farming practices are maintained. Looking at the life-history of any given seed would enable one to see that these are given different meanings and values at different points in time; for example, seeds are variously commodities with financial value, used in various ceremonies, sources of nutrition and sustenance. The biographies of seeds are thus animated by various forms of social relationship, but seeds are not in this context passive receptacles of meaning. Rather their physical properties are themselves constitutive of the meanings they are given, and by extension it is important to realise how seeds animate particular forms of social relation.

Anthropological perspectives on farmers’ seeds and local knowledge

In the context where agriculture provides a livelihood for 85% of the total population, the importance of seeds in Ethiopia has remained significant for consumption and income generation at national and local level (Belete et al., 1991; Beshah, 2003). The landscape of Ethiopia, particularly the northern part, is mountainous in which farmlands are fragmented under smallholder agriculture. In this type of agriculture, farmers often grow a range of seed diversities which have a capacity to adapt to different micro environments. Similarly

Clawson (1985) described that Mexican farmers are practising multiple cropping in which they ensure their harvesting security through growing a number of seed diversities within one or limited plots. In the contemporary context, however, maintenance of such seed diversity and agricultural productivity is becoming challenging for many reasons, including drought, flood, depletion of soil nutrients, and other natural calamities. Further, integrated socio-cultural institutions and associated knowledge systems which are central to seed management (Haugerud, 1988; Louette and Smale, 2000) are deteriorating due to external intervention and change of lifestyle. As observed in southern and eastern Africa, the cumulative effect of all these, which includes the challenge of getting diversified seeds which have potential to grow in a range of fragmented smallholder farms, resulted in a scarcity of resources (Delgado, 1999). Worede explained:

In situ (on-site) conservation of farmers' varieties on smallholder farms is providing a valuable option for conserving crop diversity ... More importantly, it helps sustain evolutionary systems that are responsible for the generation of genetic variability. This is especially significant in the many parts of Africa subject to drought and other stresses, because it is under such environmental extremes that variations useful for stress-resistance breeding are generated. In the case of diseases or pests, this allows for continuing host-parasite co-evolution. (2011:364)

This account reveals that there is a need to promote conservation of seeds while they are in hands of farmers, on-site, because farmers have long-term experience of cultivating agricultural crops. Agricultural crops (landraces) are one of four types of plant genetic resources,⁴ where human beings directly cultivate species in order to produce the most diverse and mixed population in 'folk nomenclature, collections, and scientific descriptions' (Orlove and Brush, 1996). Hence, seeds are the most important source of food, knowledge of which anthropologists have advocated be included as a component of plant genetic resources⁵ for species directly managed and manipulated by people (Orlove and Brush, 1996). They are also a critical means of preventing hunger for poor people and have the potential to save the deteriorating world food diversity (Shiva, 2001; Bellon, 2004). Further, the health of local people in poor countries is often directly dependent on local food production providing sources of basic nutrition (WHO, 2005). This implies that maintaining seed diversity keeps local communities healthier and more productive as they get sufficient nutrition from their

⁴ There are four types of plant genetic resources: (1) landraces of crop species, (2) semi-domesticated (weedy) crop relatives, (3) wild crop relatives, and (4) non-domesticated perennial species (Orlove and Brush, 1996)

⁵ The term 'plant genetic resources' refers to 'varieties of crop species' (Orlove and Brush, 1996).

smallholding farmlands. However, conventional plant breeding ignores the important contribution made by traditional crop genetic resources which are maintained through a range of cultural practices under diverse contexts of smallholder agriculture (Shiva and Krishnan, 1995; Oosterhout, 1996).

Scientific approaches to agriculture have generally focused on maximizing productivity through high input farming and improved seeds (Godfray et al., 2010; Fan et al., 2012). This situation leads science to neglect local knowledge, including the socio-cultural aspect of farmers' seed conservation, whereas most types of FSs are maintained through traditional management systems. Escobar (1991) states that development approaches in the 1970s were orientated towards an economic perspective, and the socio-cultural aspects and local knowledge of communities were not considered. Similarly, Beshah explained:

The community's local knowledge on resource management, local institutions and coping mechanisms were not given any attention. Instead, the methodological approach used is the transfer of technology that suits research and extension agencies. (2003:22)

Such ignorance, then, resulted in loss of various forms of local seed diversities and associated knowledge (Shiva and Krishnan, 1995). Since the 1930s, a number of studies reveal the dramatic increase in the rate of loss of FSs and this is caused primarily by the spread of HYVs and industrialization of agriculture (Cleveland et al., 1994:741). The adoption of high yielding uniform cultivars has dominated over the genetically variable, indigenous varieties (Altieri and Merrick, 1987; Orlove and Brush, 1996), and such domination has destroyed the diversity of FSs resulting in vulnerability and abandonment (Altieri and Merrick, 1987; Cleveland et al., 1994). Lichtfouse explains, 'today agriculture consists of the intensification of a few crops, all at the cost of losing that magnificent genetic diversity resulting from millennia of trial and error' (2011:3). This challenge, together with other factors such as acculturation and replacement of mixed crop subsistence farming by commercial agriculture, contributed to the genetic erosion of FSs (Altieri and Merrick, 1987; Oldfield and Alcorn, 1987; Cleveland et al., 1994; Orlove and Brush, 1996). For example, some of the earliest morphotypes of Ethiopian Barley (e.g., hooded barley) are extinct and some other barley types (e.g., smooth awned types, hull-less types), which are kept at the Gatersleben gene bank in Germany, can no longer be found in the country (Asfaw, 2000: 78).

This trend reveals that the future is likely to be even more challenging as some local food crops are under threat of extinction due to land use change, introduction of high input agriculture as well as climate change. Modern sectors, including governments and conservation organizations, underestimate the value of social aspects of seed conservation and exclude local people from development planning for many years. Thus farmers' experiential knowledge of seeds is overlooked. Implementation of most development policies follows various forms of politics and intervention that are often characterized as a top-down approach (Chambers, 1983; Hobart, 1993; Shiva and Krishnan, 1995; Brush, 2004; Escobar, 2011). The imposition of this kind of development agenda arguably undermines local people's contribution, so that science in agriculture is lacking the context based on experiential knowledge (Sillitoe, 1998). Drawing on experiences of socio-political struggle in Latin America, Arce (2011) explained the interaction between expert knowledge and people's everyday knowledge in the process of social change; this forms the basis for understanding the embodiment of certain types of knowledge in people's livelihood practices and their contribution to science, development and political processes. Arce further asserted that:

a path was forged for critically evaluating state policy intervention and acknowledging that the everyday knowledge of local people could enrich science and improve development practice in ways that were constructive in regard to political participation and state policy making. (2011: 281)

Anthropologists have been central in raising all the aforementioned and many other complex issues through important work that has emerged in 'popular history, studies in post colonialism and political economy' (Gudeman, 1992: 141). Mintz and Bois state that 'anthropologists have been writing papers about single substances – food sources, plants, animals, and foods made from them – for a long time' (2002: 102). By doing so, anthropological works reveal the value of local knowledge in agricultural development in which farmers' knowledge is proved to be effective in places where there are collaborative projects between local people and scientific experts (Sillitoe et al., 2004). Hobart asserted that:

Anthropologists have long been among those who have questioned whether such scientific knowledge is as all-encompassing and efficacious as its proponents claim. So it is apposite that the contributors to this collection, who are critical of the workings of scientific knowledge in processes of development, should be anthropologists. (1993: Introduction)

There are empirical findings which prove the significance of local knowledge to development despite ignorance from science as explained in the above critique. For example, a study in Bangladesh revealed that incorporation of local and experiential knowledge in soil and land resources surveys is less costly while producing relevant and detailed information (Sillitoe et al., 2004). This is because ‘farmers’ knowledge of the soils in their fields is the most locally relevant understanding of those soils, and there are potential efficiency gains over expensive land and soil surveys in collecting and using local soil knowledge’ (Sillitoe et al., 2004: 174). Further, Habarurema and Steiner (1997) explained that Rwandan farmers have accumulated immense experiential knowledge on their land and soils owing to the fact that they have tilled the hills of Rwanda for countless generations, which implies that involving local people and incorporating such knowledge into science would advance the contemporary agricultural research. Such a trend of recognition of local knowledge would also help policy makers to be aware of different contextual issues which were perceived as minor but could have a significant influence on the course of policy implementation. Hoben asserted:

Assessing community contextual livelihood in terms of their historical and social perspectives can correct factual errors in policy makers’ knowledge of local conditions ... so that relevant study would contribute to development planning by providing a comprehensive picture ... and it can do this by investigating the kinds of interest individuals have ... and the institutional context in which decisions affecting these interests are made. (1972: 579–580)

This shows that policy documents and management plans need to be produced in consideration of socio-cultural and historical circumstances of a given community as well as various forms of knowledge systems in different contexts. Given such a problem and the apparent failure of top-down approaches, governments and researchers call on cooperative research initiatives between farmers, conventional plant breeders and other researchers (Naylor et al., 2007). As a result, governments and researchers have been increasingly promoting community participation and involving local people in development projects and agricultural research activities because these are crucial to provide appropriate tools and development packages in the process of applying external intervention. The research in Harbu wereda of Amhara region in Ethiopia, for example, indicates how governments and non-governmental organizations are promoting community participation in the course of applying development projects. Frankenberger et al. describe:

Regional as well as wereda government officials are involved in reviewing project proposals and adequately incorporating projects into the wereda development plan. Similarly, wereda and kebele level food security task force members and DAs receive technical training prior to their involvement in project activities. Community members apparently actively participate in targeting exercises of this micro-enterprise and agricultural development project (2007: 73)

External agents often promote such kinds of approach through Participatory Rural Appraisal (PRA). Chambers (1983) described PRA as the process of empowering and enabling local people to analyse their world as well as presenting their knowledge so that it provides creative learning particularly for the poor to implement their planning and action. However, the idea of participation has its own problems because the needs and preferences of farmers are often different from employed external agents. The amount of information generated in ‘participatory meetings’ including PRA is often not fully recorded, which creates conducive situations for outsiders (external agents) to construct and legitimize their needs. Mosse (2001) argues that facilitators of participatory meetings (in this case agricultural experts, government officials and development interventionists) take the lead in running the process by which they impose their project agenda. Therefore, dominant roles of outsiders often manipulate the power of ‘people’s knowledge’ which results in the programme decisions taking place with little attention to locally produced knowledge. In this way, one can see that even where methodologies such as PRA are meant to be responsive to the values and beliefs of local populations, such methodologies can in practice force communities into subjective positions that do not well reflect the contextual nature of their knowledge and the diversity of understanding that can exist even in a small group. Empirical data from Kibtya shows that although Development Agents (DAs) apply a range of participatory approaches, they encounter a greater extent of tension with farmers due to varied interests and misunderstandings on the induced idea of development (see details in Chapter 4).

In Ethiopia, there are a number of government programmes and NGO initiatives which are promoting agricultural development through participatory approaches including PRA. Most of them are, however, focused on biological conservation works, whereby local seed conservation, particularly socio-cultural aspects of seed management, remain challenging. Some NGOs and programmes such as the Ethio-Organic Seed Action (EOSA) and Seeds of Survival/International (SOS/I) are engaged in supporting smallholder agricultural productivity. They build technical capacities of farmers and researchers, promote

‘enhancement of farmers’ varieties and in community level seed production strategies ... as well as use and management of agricultural biodiversity’ (Worede, 2011: 364).

However, these initiatives are not extensively supported by the necessary and relevant research data so that the socio-cultural aspects of local seed conservation are not yet explicitly elaborated, particularly in marginal and less biodiverse places with subsistence farming practices. This problem stems from the fact that local knowledge of seed use is poorly understood and government policies in line with broader trends have promoted the erosion of local farming practices, as emphasis is given to high input agriculture and improved technology (Matson et al., 1997; Pinstруп-Andersen and Schioler, 2001; Cuffaro, 2003; Fan et al., 2012). Clawson explained that ‘the general practices of traditional, small-scale tropical farmers including their intraspecific polyculture and interspecific multiple cropping is less understood’ (1985: 57). Particularly, the supporting values of traditional norms and ethics, belief systems and informal communications are not well articulated from the perspective of how these would contribute to the well-being of the environment and sustainable use of natural resources through practical activities (Binswanger and Pingali, 1989; Shiva and Krishnan, 1995; Shiva, 2001; Johnston, 2012).

I argue that Africa needs smallholder-led agricultural growth so that attention needs to be paid to the complex web of social, cultural and environmental contexts of the livelihoods of smallholder farmers; because farming in the context of smallholder agriculture is highly interwoven with farmers’ social life; kin relations, communication, resource sharing and local knowledge; and these are linked to reducing risk through ensuring stability and sustainability of the production system. Any intervention and research endeavour which does not consider such local and contextual aspect of farmers’ livelihoods would likely face a severe challenge to achieving its goal.

Research methods

This study aims to provide an in-depth, contextual understanding of the practices, relationships and understandings that constitute knowledge relating to seeds and farming in the community of Kibtya. To this end, I adopt an inductive ethnographic approach predicated upon ‘attention to the everyday, an intimate knowledge of face to face communities and groups’ (Marcus, 1995: 99). Atkinson (1994) explained that though scientists interpret the

term ethnography in many ways, it usually emphasizes the exploration of particular cases and phenomena. Rather than testing hypotheses, ethnographers study a small number of cases in detail, working from the specifics of the context under investigation. Eriksen (2001) suggests that such an approach is manageable, because the size of the studied community is small enough for the researcher to build intimate understanding and knowledge about people and their interaction with each other and within various contexts. Stahler and Cohen similarly explain the strength of the approach:

The major advantage of ethnographic methods is the ability to obtain in-depth and detailed information from the point of view of the research participant that is not constrained by predetermined categories.... If trust and rapport with research respondents are established, ethnographers are often able to elicit rich information that is usually out of the reach of other methods. (2000: 2)

Use of the ethnographic method also helps my research process to evolve from the point of binary communication to a more extended set of interactions within the complex social network of Kibtya community. Hence, using an inductive approach, my own interests were shaped in relation to my evolving understanding of the ideologies and practices of my informants. Eriksen (2001) explained that ethnography is the most important source of new knowledge, and to which anthropologists often give greater emphasis in their fieldwork. In other words, ethnographic fieldwork enables me to get to know more and more farmers, which provides me with a flexible environment in terms of access to a range of information through a number of informants with different backgrounds and statuses within Kibtya. This situation, coupled with the extended period involved (September 2011–July 2012) with farmers gradually built my confidence to talk about some cultural issues and relationships between farming and politics. Thus I managed to develop trust and explore a range of issues as I got into the deeper aspects of social life, including but not limited to interactions with people and with environment, social relations, attitudes and different views towards government policies, as well as the politics of internal and external communications. Such ethnographic methodological framework also allows me to obtain significant understandings of the study community under a specific socio-cultural context through a range of qualitative methods such as participant and non-participant observation, focus group, semi-structured interview and other relevant tools, including freelisting and identification exercises (Stahler and Cohen, 2000; Bernard, 2006; Newing, 2011; Puri, 2011a).

In the course of applying such qualitative methods, I used non-probability sampling in which I focused on targeted sampling in particular, as this strategy provided me with the flexibility to meet people (of all age groups and gender) with a range of experiential knowledge and to explore their views and interests on natural resource management including seeds and farming. Newing explains:

In non-probability sampling, the probabilities that any one case will be included in the sample are not known ... indeed, the total population need not be defined precisely, and no sampling frame is required. (2011: 67)

For the aforementioned reason of seeking in-depth information, I did not engage in generating statistical and quantitative data, so I have not defined the sampling frame in terms of determining total population. The process of selecting certain villages and households in Kibtya was made after spending a substantial amount of discussion with my key informants and conducting field observation. Although I conducted some interviews, interacted with people and made participant observations with a number of individual farmers from all the sub areas (*gots*⁶) of Kibtya community,⁷ I focused on a few households in *Abichu-got* and *Aba-geto-got*. Although *Aba-geto-got* falls outside of Kibtya according to the current political structuring of villages, traditionally both *gots* are known as Kibtya and also they are geographically situated in close proximity to one another. Another reason for focusing on these two *gots* is related to the fact that their location is somehow central compared to the other two *gots* in Kibtya. For example, the administration centre is situated in *Abichu-got* so that I had a number of opportunities to talk to many farmers who comes to *Abichu-got* seeking administrative service.

At the beginning of the fieldwork, I employed non-participant observation. The purpose was to learn and explore the lifestyle of the study community, particularly in the context where they do their living without being bothered that they are being observed by an outsider (Stahler and Cohen, 2000). Before undertaking any non-participant observation however, I asked for and receive free, prior and informed consent from those being observed (Puri, 2011a). In practice, informing my intention to observe farmers' activities created a gap

⁶ *Got* is the smallest administrative structure under the current political structuring of communities. So, one village might be composed of one or more *gots*. The prefixes *aba*, *ali* and *abichu* refer to the name of the specific *got*.

⁷ Sub areas (*gots*) of Kibtya community include: *alibahir*, *aba-geto*, *abichu* and *aba-wasu*.

between me as an observer and farmers as an observed. Over time, this went very smoothly and most informants embraced me as if I was one of them. Therefore, I would say that by not interrupting or obstructing their activities, the approach of non-participant observation helped me to understand how people naturally behave and take action in various circumstances. This opportunity also helped me to regularly identify and amend the main themes and questions I used in the subsequent qualitative methods.

In order to strengthen my relationship and develop trust with people in Kibtya, I involved myself on many occasions with farmers and joined in their conversations to give bits of my opinion and take their views without the prior structure of interviewing guidelines (Newing, Puri, 2011a). Hence, I carried out a number of informal interviews in many places and various circumstances, such as in marketplaces, farms, in places where farmers gather such as social gatherings, wedding or funerals, etc. These kinds of long discussions created sound relationships between my informants and me as a researcher. Further, such incidences brought many other important opportunities for me to stay in touch with farmers whereby I managed to be known by most farmers in the community and develop trust through time.

Though there is no absolute clear-cut distinction in terms of different phases of fieldwork, the steps of getting to know farmers and contextualizing myself with different sets of local lifestyle in houses, fields and social events represent the first phase of fieldwork (September–November). Then I started to participate in a range of farming activities and events which helped me to understand how people live their lives, how they think, speak and act, and how they describe and explain their worldview and motivations (Puri, 2011a). In the course of my entire ethnographic fieldwork, I had a number of opportunities to participate in farming and household activities, cultural festivals, weddings and other social gatherings. This in turn provided me with an opportunity to bridge the gap between farmers and myself as a researcher and outsider. This approach of participant observation then helped me to create space and discuss with farmers individually or in groups so that I managed to obtain first-hand accounts of farmers' understandings of issues, including the existing seeds in relation to the introduced ones, farming practices, attitudes towards government, and school education. As I continued to participate in many activities with farmers, their trust in me increasingly developed, particularly at the latter stage of my fieldwork (March–July) to the extent of sharing their personal thoughts on the relationship between farming and politics through

informal discussion. At this level, I gathered that most farmers embraced me as part of their community so that they carried out their activities without noticing that they were being observed by somebody from outside of the community. This also provided me with a fundamental understanding as to how people's culture, norms and knowledge systems in Kibtya guide actions as well as govern individual and collective behaviours in their real and everyday life ways. It further helped me to investigate how local knowledge is acquired and transformed through cultural modes of transmission, such as storytelling, observation and action learning.

Informed by participant observations and informal interviews, I developed a list of guiding questions for semi-structured interviews. I carried out such interviews with elders, young farmers, women, children (above 12 years of age), students, teachers, government officials and DAs. The interview guide was designed with open-ended questions so that I had space for flexibility to pose further questions (if not listed) based on the conversation. I sometimes amalgamated some listed questions if a respondent had already answered them during the discussion. Therefore, the guiding questions of the semi-structured interviews were continuously amended according to the emerging themes from the preceding interviews or observations. This allowed me to refine my understanding of the ideologies and beliefs expressed, and to be led by participants' own sense of what was important and significant about these.

Given that most interviews were undertaken over extended periods of time and in a situation where taking notes per se was not sufficient, I used tape recording based on prior informed consent with each informant. The recorded interviews were then transcribed, translated and organized to carry out further analysis. Following such subsequent qualitative approaches and semi-structured interviews in particular (Newing, 2011), I conducted five focus group discussions (each group consisting of 10–20 members) with farmers, council of elders, teachers and DAs. The aim of each focus group discussion was to seek further information and triangulate semi-structured interviews which were carried out with individuals. I also used the opportunity of discussion with members of focus groups to gain a deeper understanding about different views of discussants and various levels of knowledge on socio-cultural, environmental and political issues within Kibtya community.

In order to identify prominent seeds in Kibtya and examine seed knowledge amongst respondent farmers I carried out a freelist exercise as an extension of my semi-structured interviews. Puri (2011a) explained that freelist is used to check whether the displayed item is salient and meaningful as well as to compare informants' different perceptions regarding the degree of importance of the domain. The purpose of freelist in this research context is to understand which kinds of seeds are mostly known in the study area and what is the degree of agreement and knowledge between involved informants about the prominence of certain seeds. About 20 respondents (10 from each sex), participated in the exercise and some seeds are determined as prominent in the study area (see detail in Chapter 5). Further, I carried out an identification (ID) exercise as an extension of the freelist exercise, in which common seeds in Kibtya as listed in the freelist exercise were identified with their respective diversities and individual names. Twenty-eight (12 male and 16 females) respondents were involved in the ID exercise. The age of respondents ranged from 14 to 70 in order to examine the level of knowledge on seed diversity across different age and gender categories (see detail in Chapter 5).

Data analysis

Partial analysis of data started even while the process of data collection was under way. During ethnographic fieldwork, I often summarized my annotated fieldwork diary to describe and record activities I engaged with and to make first-hand analysis on a daily basis. However, it was difficult to capture all of the field notes made through recording, interviewing and observation. Translating data from the local language (Amharic) to English, as well as transcribing and drafting in the form of relevant structures for analysis took a lot of my time. In order to get sufficient time for synthesizing field notes and to carry out first draft analysis, I selected three research assistants at different phases of the research who mainly helped the process of typing and transcribing data (Riviera, 2010). The interpreted and summarized field notes were typed up and analysed in the form of a report so that I managed to regularly send these reports to my adviser every 2–3 weeks throughout the course of my fieldwork.

Following fieldwork, field data were systematically analysed to draw out key themes and issues using qualitative data analysis software (nVivo). In other words, I reorganized semi-analysed and summarized materials in order to identify the primary patterns of data which is

often the main purpose of qualitative information (Stahler and Cohen, 2000). I also engaged in typing up unfinished data, theming and coding, to understand the general form of the entire data. I then employed indexing (Denzin, 2000) according to the predefined codes and sub codes. Audio records were also transcribed, themed and coded to enrich other qualitative data collected through interviews and field notes. The complete set of reorganized and coded field notes as well as summarized reports were re-read and the necessary sections highlighted according to the emerging themes. I used the grounded theory approach (Glaser, 1992) for analysis of all interviews and focus groups, whereby categories and concepts which emerged from the entire texts helped to form the structure and key arguments in this research thesis.

Chapter 2: Kibtya in context

Introduction

This chapter provides contextual information that forms the basis for the subsequent chapters. I describe how farmers in Kibtya lead their life in the context of smallholder agriculture where land is scarce, rainfall is erratic and fertility of soil is poor. Additionally the chapter describes key demographic and economic contexts, and situates the study site in relation to local and national political and administrative structures.

Since 1991, Ethiopia has been experimenting with federalism in which power is decentralized giving leverage to regions to internal self-rule, including the authority to raise local revenue and administer their own budgets and development plans (Ayenew, 2002). In this vein, the Ethiopian government established nine regional state governments according to their respective ethnic basis and two autonomous administrative areas. Amhara region is one of these regions and it is the second largest of the regional states in Ethiopia, located in the northern, north eastern and central areas of Ethiopia, covering an area of 170,752 km² (about 11% of Ethiopia's total area) (Adenew and Abdi, 2005).

Amhara region is generally divided into three major climatic zones ranging from 1,500 meters (lowlands) to 2,300 meters (semi highland) and above 2,300 meters (highland), which account for 28%, 44%, and 20% of the land area, respectively (Adenew and Abdi, 2005). Given the region's wide-ranging altitude and ecological variations, implementation of agricultural activities is characterized by diverse practices according to socio-cultural and geographical contexts. Farmers' achievements in productivity and farming livelihood in such diverse agro climatic conditions is thus linked to various circumstances including soil fertility, landscape, farm size, land use, etc.

Agriculture in Amhara region is rain-fed and largely depends on precipitation which makes the region vulnerable to droughts, famine and poverty. However, these situations are not similar throughout the region so that the pattern of productivity and economic gain varies from location to location within the region (Adenew and Abdi, 2005). For example, the central and western zones of the region including eastern and western Gojam and northern Gonder are among the country's highly productive agricultural areas. Conversely, the north

eastern and central highland zones, including South Gonder, North Wollo and North Shoa, suffer serious land degradation and recurrent drought hazards (Adenew and Abdi, 2005: 11). Agricultural productivity in South Wollo (where the study site is located) is also similar to other zones in the northern part, which leaves 61.2% (Sharp et al., 2003) of rural people below the poverty line⁸ (Watts, 1968).

The region is divided into ten administrative zones, 106 rural and nine urban *weredas* and 2,927 rural *kebeles* (Adenew and Abdi, 2005). According to Baker, ‘*Weredas* are comprised of peasant administrations, which formerly were known as peasant associations but increasingly are referred to as rural *kebeles* (rural neighbourhoods)’ (2012: 345). In the contemporary context, *weredas* are equivalent to districts and comprise a number of *kebeles*. *Kebeles* are further divided into *ketas* which are local administrative zones structured under *kebeles*. *Ketas* are still further divided into *gots* which are the lowest administrative sites where villages are situated (see details under ‘political context’ later in this chapter).

The following two maps respectively shows the location of Amhara region and the study site in Ethiopia (Figure 2.1); and distribution of Amhara region’s administrative zones in which *Mekdella wereda* (study site highlighted in red) is located within South-Wollo zone (Figure 2.2).

⁸ The poverty line represents the level of income that divides families of a particular size, place, and time into the poor and the non-poor (Watts, 1968).

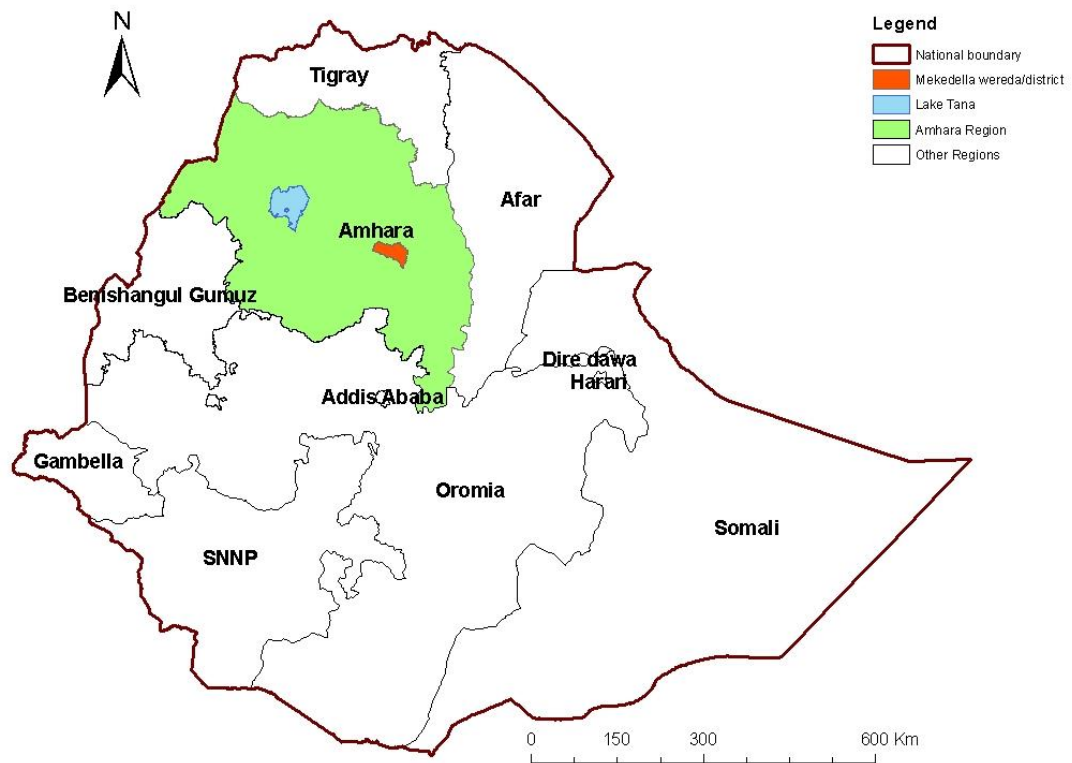


Figure 2.1: Location of Amhara region in Ethiopia

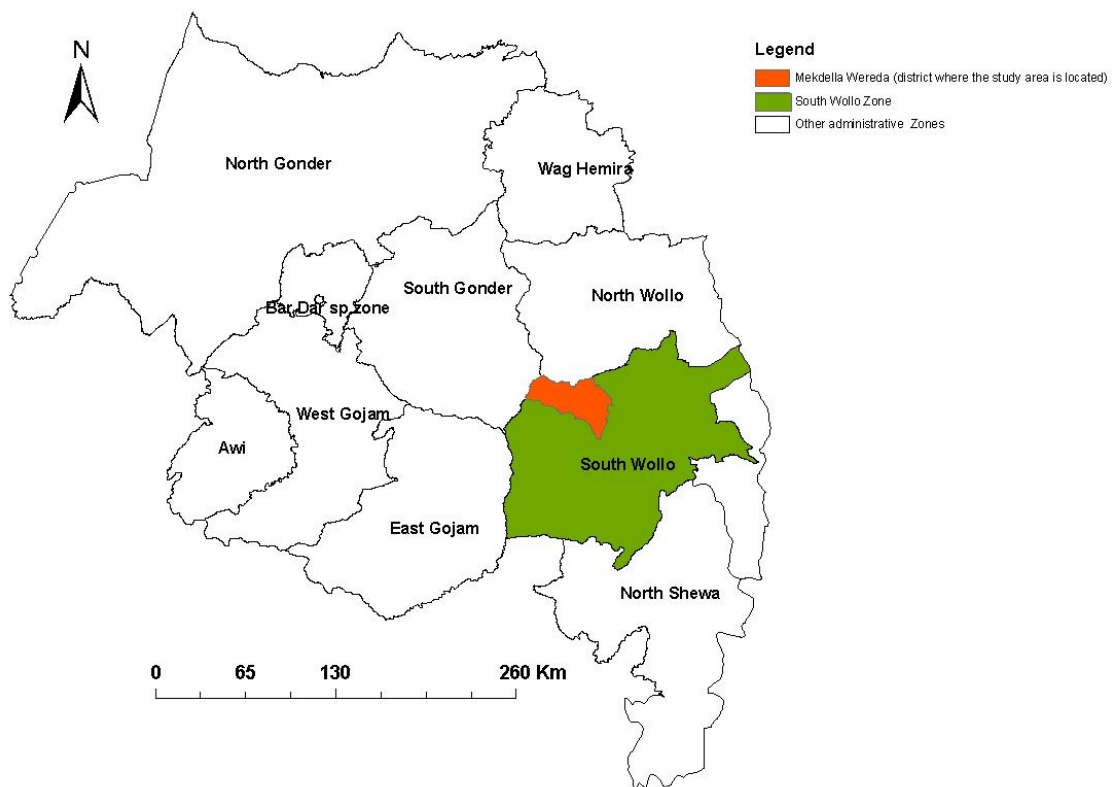


Figure 2.2: Amhara regional map with South Wollo zone and Mekdella wereda district

The study site

Kibtya⁹ (the study site) is one of the 2,927 rural *kebeles* (Adenew and Abdi, 2005) in Amhara region. Kibtya is divided into 28 *kebeles* and is located at 11° 11' 53.30" N latitude, 39° 4' 13.67" E longitude. It is situated about 6 km south east of Masha town, which is the town of Mekdella-wereda and the most important administrative centre of local government.

Figure 2.3 shows Kibtya's specific location and all *kebeles* in Mekdella wereda.

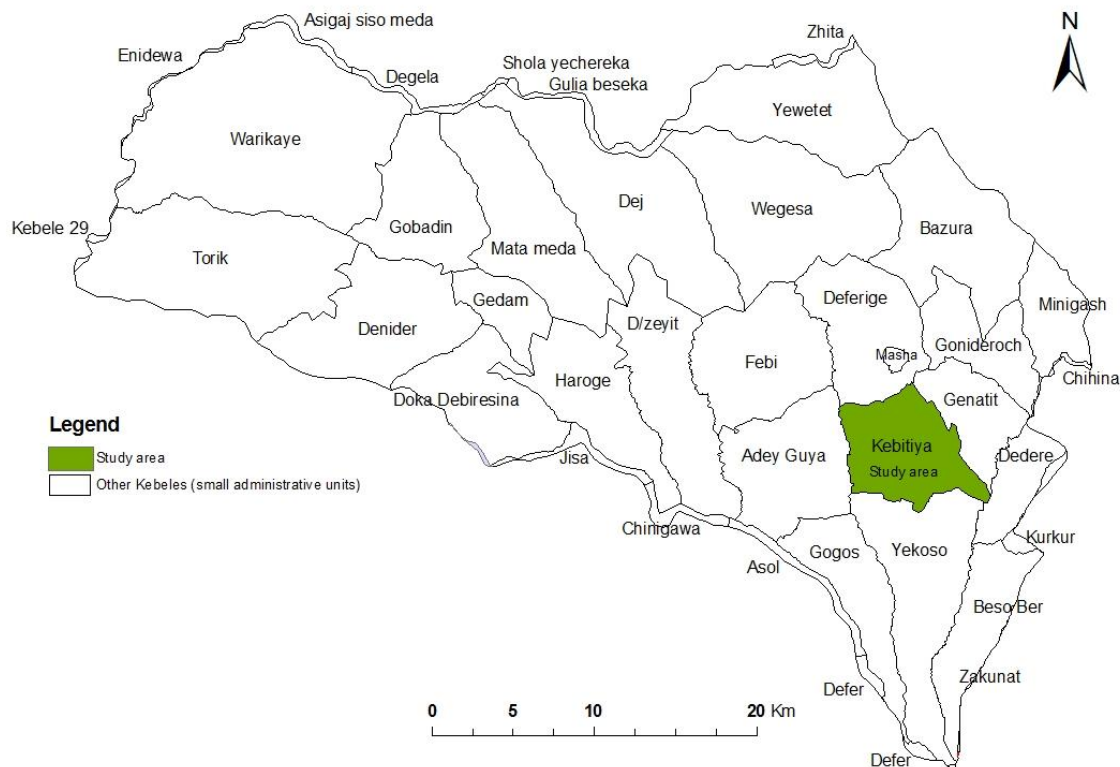


Figure 2.3: Kibtya and other *kebeles* in Mekdella wereda

Kibtya is situated in the semi-highland (locally known as *weyna-dega*) agro climatic condition. According to Mekdella Wereda Agricultural Office, the average annual rainfall is 891.23 mm and the average annual temperature is 15.5°C. The general landscape of Kibtya is characterized by flat, undulating, gentle slope, and mountainous areas with a range of land use systems. Vegetation cover in Kibtya is characterized by a diversity of remnant natural green plants from the past which includes *Acacia* subspecies such as *Acacia tortilis*, *Acacia albida*, *Juniperus procera* and *Eucalyptus globulus*. Other local tree species such as *Olea europaea* and *ficus* species are sparsely grown in some parts of the area (Mekdella Wereda

⁹ In Figure 2.3, the name 'Kibtya' is spelt as 'Kebitiya', but local people call it 'Kibtya', so that is the name I use throughout the thesis.

Agriculture Office, 2009, unpublished documents). *Eucalyptus globules* is the most dominant tree species which Kibtya farmers often grow in their backyards for economic purposes (selling as fire wood) as well as for construction of houses. The soil types in Kibtya are sharply demarcated zones of clay, sand and loamy soils which are categorized as 45% of verti soil, 40% of slightly loam and 15% of clay loam.

Agricultural seasons

The main rainy season is between July and September (locally known as *meher*-rain). There is also another rainy season (locally known as *belg*-rain), which falls mostly during March–June but sometimes it could rain in January as well. *Mesno* farming (farming through irrigation) is also another means of production which is distributed throughout all seasons, but beneficiaries of this farming are only those who have access to irrigation. These farmers can cultivate crops and vegetables throughout the year so long as the supply of water is sufficient across all users.¹⁰ In most cases of *mesno* farming, ploughing starts in September and sowing is carried out in November.

As indicated, *meher* in Kibtya is the main farming season, because it falls under the main rainy season (June/July–September), which means that crops which are sown between May (mostly, legumes) and July (other crops such as barley, *teff*,¹¹ wheat) would have a reliable supply of rain. In the case of *meher* season, although the pattern of *meher*-rain is changing (e.g., previously rain used to start in June/early July), farmers are still having trust in this season as it regularly rains after mid-July (at the latest). Having such trust in mind, most farmers start to plough earlier (from March) in order to prepare their land for the main rainy season, i.e. June–August. In sum, ploughing during the *meher* season starts between January and March, followed by sowing in May–mid-July; then the harvest will be collected in September–December.

Belg season is not reliable because the availability of rainfall is not regular. In this season farmers often plough and sow between January and May (depending on the rainfall) so that

¹⁰ Sufficiency of irrigation (*mesno*) water depends on the amount of rainfall to fill up Tulite River. Unless there is *belg* rain (January), the amount of water in Tulite river is decreasing from January onwards so that farmers located downriver are often facing a lack of water for their crops or vegetables.

¹¹ *Teff* is a staple food in most parts of Ethiopia, and it has many varieties which are grown across different parts of the country.

they harvest between June and July. A similar pattern of erratic rainfall (particularly in the case of *belg* season) is reported in the case of North Shewa of Amhara region. For example, ‘the *belg* barley production is constrained by a more biotic and abiotic factors than the *meher* barley system’ (Mulatu and Grando, 2006: 65). Similarly, most farmers in Kibtya argue that rainfall in *belg* season, or as they call it ‘*belg-rain*’ is not reliable particularly in the contemporary climate conditions. Hence, it is difficult to predict in which month the *belg* season would start, so that the *belg-rain* could start in January, March or April. Further, some informants believe that if they occupy their land by *belg* harvest (even if there is rain), their lands could not provide good production for the next *meher* harvest because, as they said, ‘the earth would get cool down’ meaning ‘the soil would lose its nutrients’ to give good production. For this reason, they prefer to fallow their land for *meher* season hoping to produce sufficient yield once a year. Others argue that if rain falls during the *belg* season (January–May), they often use some portion of land and sow appropriate crops such as chickpea, lentil and barley. There are a number of reasons for this: on the one hand, they would have production security if the *meher* harvest fails; on the other hand, they would maintain seed diversity from both seasons. I gathered the same responses, particularly from women about keeping different diversity of seeds by being engaged during both seasons. Other farmers who favour *meher* harvesting argue that *belg* harvest is more likely to fail (due to lack of sufficient rainfall) than *meher* harvest. This idea seems to be adopted by most Kibtya farmers as the *meher* season falls during the main rainy (June–August/September) season, which is relatively reliable.

In the context of Kalu, which is about 200 km from Kibtya, *belg* land is cultivated in October and November, followed by sowing in March–April and harvesting is in June/July (Beshah, 2003:177). If we go to other parts of the country, such as North Shewa and North Wollo of Amhara region as well as Bale and Arsi of Oromia region, the *belg* season is often in February–May, and *meher* is in June–October (Mulatu and Grando, 2006). Mulatu and Grando further reported that:

In the *belg* production system which is practiced in north and northwest Shewa, north Wollo, Bale and a few areas in Arsi, *belg*-barley¹² is planted in February to early March and harvested in early July ... in the case of *meher*, in north west of Ethiopia

¹² *Belg*-barley is a type of barley cultivated during the *belg* season.

(Gonder and Gojam), cultivars are planted from mid-May to June and harvested in early September to early October. (2006: 8)

Such kind of seasonal variation is observed even in the nearby areas of Kibtya such as ‘Gimba’, ‘Yekoso’ and ‘Besober’ which are located (15–80 km from Kibtya). Most informants described that the *belg* season is often common in highlands (locally known as *dega*) such as ‘Yekoso’, ‘Kosober’ and ‘Gimba’. The main crops grown in these areas are barley, oats and wheat (to some extent). Farmers in highland areas (*dega*) such as ‘Yekoso’, ‘Kosober’ and ‘Gimba’, usually start ploughing from the end of August and September. Then, sowing proceeds from November to January, depending on rain availability. Use of seasons for cultivation still varies as we go further from Mekdella wereda (the district in which the study site is located).

Smallholder farming and livestock management in context

Farming life in the context of smallholder farming is an integrated system with crops and livestock management in which different tasks and activities are interwoven with one another to provide a full picture of livelihood. Hence, the role of animals cannot be seen separately from farming, income generation and nutrition (through provision of milk and meat). Animals are good means of generating income, where farmers would fill any gaps which may be created due to scarcity of food crops, government debts (e.g. fertilizer, modern seeds, tax, etc.), school fees and other expenses. Belete et al. pointed out that:

Livestock play an important role in Ethiopian farming in supplying animal power for cultivation, especially in highland areas. In the highlands, peasant farmers keep livestock as a form of insurance against crop failure, as a form of savings for emergency use, for breeding draught animals for cropping, to supply transport services, to supply manure for fuel and as a source of meat and milk. (1991: 167)

Farmers’ relationship to their animals is not only economic. For example, in the context of east African pastoralists, cattle are not only bred for meat or milk; rather, people use animals for a range of social and cultural purposes including ‘using them in marriage, as compensation for injuries and death and as offerings to the god and spirits ... symbolic significances, cattle represented the ideal prestige wealth’ (Lewis, 2003: 177). Like in many other perspectives in the wider context of smallholder farming, human–livestock relationship in Kibtya is mostly characterized by affection and intimacy rather than purely dominance

(Strang, 2004; Campbell, 2005), because domestic animals are closely linked with farmers' livelihoods so that they support one another. Similarly, Kibtya farmers see beyond their animals' material benefits, which include sacrifice for ritual purposes, different colours for marketing and ritual, other religious requirements, good mothering instincts, herdability, ability to walk long distances and plough (Köhler-Rollefson, 2000: 2). In Kibtya, farmers keep their animals in houses where people live. The section for animals within the house is called *gat*, where animals stay during the night. Farmers are told that animals need a warm environment during the night. Some farmers said they love to hear their animals chewing the cud during the night. They also like the smell of animals, their breath, and sound. Though 'much of today's remaining diversity in domestic animal breeds survives in traditional farming and herding communities in the South' (Köhler-Rollefson and McCorkle, 2004: 164), contemporary livestock management discourages close interaction and intimacy between humans and animals. In Kibtya, extension workers advise farmers to make a separate shelter for animals for health reasons, which implies that animals should be seen as objects to be used and not to be embraced as family members. Government is introducing modern livestock production in which bull service and artificial insemination, improved milk production, improved breed of sheep production, and animal fattening service is provided through management and supervision by Development Agents (DAs). This trend is increasingly threatening the existing local knowledge and management of livestock which could be more beneficial to farmers.

In 2001, a study examined the Dairy Goat Development Programme (DGDP) in Kombolcha in the eastern Ethiopian highlands. The results revealed that goats crossbred by modern breeding systems were found to be less beneficial to farmers compared to those reared through traditional breeding. The study analysed the cost-benefit of modern and traditional breeding in relation to farmer's spending of labour and other resources. The research findings showed that traditional crossbreeding provides more benefits to farmers than breeding using modern systems.

When land is scarce as in Kombolcha, more household labour appears to be used in other income-generating activities including petty trading and engagement in casual labour. Thus farmers in Kombolcha tend to spend less time on goat husbandry, but for the actual labour spent they generated more unit net benefits per unit of land and labour. The study also showed that more labour is spent on crossbred than indigenous goats, and because farmers in Kombolcha generally had less time for goat husbandry,

the indigenous goats proved to be more beneficial than crossbred goats under the improved management. (Ayalew et al., 2003: 480)

The findings from Kombolcha in eastern Ethiopia tend to be applicable in most cases of smallholder farming with a subsistence economy because farmers are often engaged in multiple tasks according to different contexts, rather than relying solely on certain activities. Farmers often need to have locally appropriate contexts where they can maximize benefits with less cost in terms of time and resources. In Kibtya, animals are good sources of income when sold, and their products (milk, butter, eggs, and even dung for fuel) often support farmers' subsistence economy. But also animals are means of social relations and communication so that they play a vital role in the context of the socio-economic life ways of smallholder farming.

Demographic context

According to census data (2009) from the Mekdella Wereda Agriculture Office, Kibtya's total population is 6,646 which is 4.3% of the Mekdella wereda total population (154,561). 35 of them died after the 2009 census. When it comes to distribution of human resources, only 30% of people are involved as full-time farmers. The rest are subordinates and/or non-participants in productivity. Table 2.1 reveals the distribution of Kibtya's human resources followed by a brief analysis of its implications.

Table 2.1: Population data and distribution of human resources in Kibtya community

Gebder	Full-time farmers	Students	Children	Elder s	Pregnant		Infants	Emigrants	Others on the move	Total population
Males	1328	435	450	273		Maternity	150	38	801	3507
Females	673	426	370	357	260	220	130	48	652	3165
Total	2001	861	820	630	260	220	280	86	1453	6611

Source: Mekdella Wereda Agriculture Office (unpublished documents, 2009)

According to the data shown in the table, about 30% of Kibtya farmers are involved in the subsistence farming activities on a full-time basis. Kibtya farmers are also continuously engaged in various forms of income diversification (to support their subsistence lifestyle) such as sale of animals, vegetables (grown in irrigable lands), and eucalyptus trees for firewood. Some farmers are engaged in small-scale trading, which is sometimes supported by

cash flow from outside, whereby migrants would bring some money back to Kibtya and invest in off-farm activities and small businesses. Infants (defined as breastfeeding children in this context) (3%) and ‘others’ (21%) are not totally participating in farming which comprises a significant portion of Kibtya’s population. The category ‘Others’ refers to those who are on the move for various reasons, such as because they don’t have land to plough, some may have health problems, etc. Students (13%), children (12%), and elders (9%) seem to have subordinates, whereby they would be partially involved in agriculture, rearing animals and other activities not directly related to farming. Some pregnant women (4%) and maternity¹³ (3%) may not be directly involved in agriculture, but they often facilitate and help in household activities. In 2009, the number of emigrants accounted for about 1% of the population, but by the time this research was undertaken (2011), the figure had increased manyfold as I observed through my ethnographic fieldwork and interviews with a range of informants.

Socio-economic context

Smallholder farming is the main feature of Kibtya’s agriculture in which economies of farmers depend upon. Farmers grow a range of seed diversities in the fragmented farmlands to ensure productivity under erratic rainfall and poor condition of soil fertility. In this vein, more than 85% of Kibtya people are dependent on rain-fed and smallholder agriculture. Such dependency on rain coupled with land scarcity, poor soil fertility and continuous change in weather condition, is leading most Kibtya farmers into poverty. The main cause of such poverty is associated with scarcity of land and those who have no land are often considered as poor, which condition is common in most parts of northern Ethiopia (Baker, 2012). Due to the challenge of land scarcity and the recurrent drought, quite a number of Kibtya farmers, particularly youths, are migrating between Kibtya and other places in the country. Women, particularly girls, are often going to Arab countries to earn some money, mostly serving as housemaids (see details in Chapter 7). In sum, one can see that the distribution of Kibtya’s human resources seems to be influencing farmers’ subsistence economy in the context of continuous socio-cultural and economic changes which are analysed throughout the thesis in order to show how these form the existing structure and life ways of the Kibtya community.

¹³ Maternity refers to those mothers who have newly born infants so that they do not participate in outdoor activities such as farming, weeding and so forth

Political context

As explained, Kibtya falls under *ketena 1* within Mekdella wereda. *Ketena 1* consists of three sub areas (*gots*). These are *Ali-bahir*, *Abichu* and *Aba-wasu gots*. In each *got*, the government has structured Kibtya farmers into two broad categories. The first is known as *hiwas* and the second as development-group/*limat-budin*. The *hiwas* structure consists of members of the ruling party (ANDM),¹⁴ while the *limat-budin* structure embraces all tax payer farmers who are entitled to have land. Each *hiwas* or *limat-budin* is organized by a group of people who live in close proximity of their villages and *gots* so that they can easily meet whenever necessary. Under the *hiwas* structure, 5–20 members of the ruling party are organized. They often focus on evaluation of party activities. There are 4 leaders (*budin-meri*) within each *hiwas* (1 leader for 5 members¹⁵) and they assemble every 15 days to evaluate the accomplishment of their party's goals. The ruling party sometimes provides newspaper and magazines to *hiwas* members to discuss a range of issues in a wider context based on information they gathered from newspapers and other media sources. The *limat-budin* structure consists of 20–30 farmers who are tax payers and have land. *Limat-budin* would also elect 5 *budin-meri*,¹⁶ so that each group leader/*budin-meri* would be responsible for 4–6 members. All group leaders are responsible to ensure the smooth operation of developmental activities often framed by government and transformed by party members. *Hiwas* leaders, in particular, are responsible for evaluating the work of *limat-budin* so that it seems they are hierarchically superior to *limat-budin*. Local government often provides training, capacity building and awareness creation opportunities to *hiwas* leaders or *budin-meri* so that they are supposed to promote new technologies such as Broad Bed Marker (BBM),¹⁷ fertilizer and new seeds. This kind of governance structure is similar in the rest of Amhara region as well as in Tigray region too (Vaughan and Tronvoll, 2003: footnote 40).

From my description of the ethnographic context, one may see how it is difficult to access reliable information under this kind of complex community governance structure. There were many incidences where I was confused about the blurred views and information provided by farmers. For example, when I was discussing farmers' opinions about FSs and HYVs, I found

¹⁴ Amhara National Democratic Movement.

¹⁵ Another name for this structure is '1 to 5 arrangements'.

¹⁶ They share such responsibilities as chairperson, deputy chairperson, secretary and two members.

¹⁷ Broad Bed Marker (BBM) is a type of technologically improved ploughing material which helps to drain water from marsh areas in order to make use of water logging farms.

conflicting ideas and comments even within the same person. In many instances, I observed that some farmers do not practise what they said. Sometimes their actions contradicted what they had told me previously. As I explained earlier, it seems to me that farmers may not want to reveal exactly what they are thinking, particularly if the issue is sensitive in terms of politics. Human and democratic rights are protected under the Ethiopian Constitution, some relevant points of which are: ‘the rights to equal access to publicly funded social services’ (article 41:3), and ‘human and democratic rights of citizens and peoples shall be respected (article 10:2)’ (Ethiopian-Government, 1991). This implies that in any circumstances, citizens or residents should have a right to express their feelings and shall not be denied public services and other benefits because of their opinion and position. The revised Amhara National Regional State Rural Land Administration and Use Proclamation No. 133/2000 states that the *kebele* resident who resides regularly in one *kebele* should be entitled to the basic services and social benefits via government offices, school, health services, market service, road, electricity, telecommunication service, religious institutions and the like (Mekdella Wereda Agriculture Development Office, 2011, unpublished documents).

In practice, Kibtya farmers are very cautious when they talk about sensitive issues such as fertilizer and improved seeds. This is because describing the drawbacks to these issues may be interpreted as disagreement with the government’s development strategy. It is not possible to state exactly what will happen if one disagrees with the government’s approach, but based on my understanding from a number of informal discussions and observations, a farmer could be suspected of being a member of the opposition party if he or she criticizes the government’s development approach. This could have a negative effect as he or she might be implicitly denied (or at least left behind) in terms of priority to get resources and benefits such as fertilizer, BBM, and paid labour work (safety net). Furthermore, he/she might not get sufficient public services from *kebele* and from other civil service offices at the district or wereda level.

Another possible reason for farmers not to reveal their true feelings may be related to the level of trust with a person who talks to them. In the process of getting involved in the Kibtya community, I later learned that getting trust from farmers is a time-consuming activity as they need to get to know more about me, my relation to the government, and the purpose of my research. They did not ask this kind of question directly of me but they often discussed

amongst themselves and observed my activities, such as where I spent my time and with whom I interacted most. During my early fieldwork in Kibtya, one of my informants, who is about 70 and well respected for his farming experience, explained as to how he was keen to use the new seeds (HYVs). He said: ‘nothing much we will be missing because of extinction of *meke-wheat*¹⁸ as it is replaced by a number of modern varieties such as *white-wheat*, *degolo-wheat*, *merar wheat*, *Assossa-wheat*, *limat-wheat* and some more ... White-wheat in particular is productive and looks attractive as it is very bright in colour¹⁹...’. After I spent about 6 months in Kibtya, I gathered a different opinion from this same person and this time he explained his view about HYVs:

... as I told you this morning, sometimes we are obliged to follow the instructions from agricultural experts ... For example, we have been told to cultivate wheat on black soil using fertilizer but to be honest with you, we don’t have a problem of wheat cultivation through use of our traditional crop rotation system in which we first sow water resistant legumes so that the soil fertility would be increased for the next year to sow wheat ... in this regard, we did not spend any additional cost as we don’t have to buy fertilizer and new seed ...

This implies that this informant initially did not trust me when I asked him about his views on HYVs. At that time, he was pretending to be a supporter of the government strategy regarding HYVs. Later, when we got to know each other better and developed trust with each other, he started telling me about not only the advantages, but also the challenges and drawbacks. This is true about all of my respondents as they gradually started to trust me after I spent some time with them participating in their activities and staying with them day and night.

Conclusion

The chapter has described geophysical data on agricultural aspects of Ethiopia which informs the general features of smallholder farming at national and local level including the study site. Understanding smallholder agriculture needs to understand the intrinsic relationship between nature and culture in which social and physical aspects of life are inseparable (Ingold, 2000).

¹⁸ Farmers’/local wheat seed.

¹⁹ Meke wheat is also white in colour.

Despite their preference, Kibtya farmers are mostly told to follow DAs advice in relation to farming and seed management. The community structure is used as a controlling mechanism in which individual farmers are supposed to implement the induced idea from external actors. Thus, the forms of knowledge described in subsequent chapters are shaped in relation to a complex political and environmental context.

Chapter 3: Past and present perspectives on land tenure

Introduction

This chapter highlights historical and contemporary perspectives of distribution and allocation of land in terms of size, location and quality of farm plots, as these have significant impacts on communication, power and social relations as well as agricultural productivity (Jacoby et al., 2002; Sharp et al., 2003). Donham explains that ‘analysis often appears to lead away from, rather than to, the actual complexities of historical understanding’ (1990: 139). This implies we need to have careful and relevant research methods, such as ethnographic methods employed by anthropologists, to understand the multifaceted aspects of historical, socio-cultural and environmental phenomena. The existing land use system in Ethiopia, particularly in Amhara region, has multi-dimensional problems. One problem is associated with landholding, whereby farmlands are very fragmented due to population pressure. This problem is associated with the growing of diverse seeds for use in cultural practices which is part of farmers’ seed management. Another problem is that land is distributed based on village settlements so that farmers are not allowed to own land at different locations out of their proximate areas. No one is allowed to plough in different locations. This creates a challenge in relation to diversifying production risks across a range of different micro environments. In order to tackle the aforementioned problems, this chapter engages with a range of anthropological literatures related to land tenure systems in Ethiopia, Africa and beyond (see, for example, Hoben, 1973; Markakis, 1975; Shipton and Goheen, 1992; Ottaway, 1977; Peters, 2004; Adenew and Abdi, 2005). The chapter examines Amhara’s land tenure system under three different political regimes (1930–present) and narrates anthropological analysis of the two traditional *rist* and *gult* land tenure systems in northern Ethiopia, particularly Amhara region. Such narrated accounts from a historical perspective are then examined from the perspective of the contemporary socio-cultural, economic and political situation of Kibtya.

The chapter identifies land as the nexus of social relations among farmers, with other actors outside the community and with the natural environment. In his work on the ‘anatomy of a traditional polity in Ethiopia’, Markakis (1975) explained that ‘through its various social dimensions, land enters into every phase of community life’. In Ethiopia land affects the ways in which resources are used, wealth is accumulated and power is claimed in the process

of agricultural production. This reveals that interpretation and meaning making related to land is more complex (Shipton and Goheen, 1992) than it is normally perceived to be, as it is intertwined with a range of contexts across diverse socio-cultural and environmental conditions.

The chapter emphasizes the kin-based *rist* land right throughout, because this system had been integrated with communities for a long period of time so that it is central to an evaluation of the impact of changes on social relationships, communication, and agricultural productivity under subsequent tenure systems. Hence, the aim of this chapter is to examine past and recent tenure systems in order to understand the relationship of farmers' livelihood to land and the impact of land use changes on contemporary farming, cultural practices, social life and economic situations.

History of land tenure in Ethiopia and the broader context

Perceptions of land and its relationship to people vary widely across different contexts throughout the world. Broad contrasts are often drawn between Western understandings of land as a commodity, and the social, emotional and affective significance of land in a other contexts (Markakis, 1975:74). However, even in the West, ethnographic accounts reveal the complex meanings that land can acquire, and specifically the range of ways in which farmers relate to land. In a study of sheep farmers in the Scottish borders, Gray asserts that:

What is essential to hill sheep farming people is a spatial relation between family and farm, between beings and a place, such that the distinct existence and form of both partake of or become united in a common substance. This relation is not created and known through farmers' self-reflexive contemplation or theoretical discourse about their farms. Instead, it is the outcome of their everyday farm work, family relations, and discussions about goings-on in the Valley. (1998: 345)

This reveals that even where land is an important economic commodity it acquires other significant meanings besides its economic values of use and exchange.

In Africa, agriculture is often characterized by smallholder farming. In these contexts farmers get use of their land based on customary norms rather than contractual principles which often govern economic exchange. While the social and cultural contexts in which these occur vary greatly, under these customary systems 'relationships with regard to land are ordered

according to basic principles of group organization and functioning, such as kinship, religion, the polity, other forms of association or a combination of these' (Markakis, 1975: 74). In many parts of rural Africa including Ethiopia, land is perceived not only as an asset or the basis for production but also constitutes a symbol of abstract values which underpins the traditional, cultural and political structure of rural existence (Cohen and Weintraub, 1975; Pausewang, 1983). Shipton and Goheen explained that 'if a single lesson emerges from recent scholarship on African land-holding, it is that it is complex, variable, and fluid' (1992: 318).

Since the sixteenth century, Ethiopian agricultural productivity and prosperity have declined through time, where the problem is mainly associated with lack of appropriate policy in land tenure systems implemented under different regimes (Mengisteab, 1990). During different periods of Ethiopian history, governments developed various land policies related to tenure system according to relevance to their respective interests. A number of researchers unpacked these tenure systems in different ways according to their respective experiences and viewpoints. For example, Adenew and Abdi (2005) categorized the Ethiopian land tenure system into three periods, namely the imperial Ethiopia land tenure system (pre-1975), the Marxist military or '*derg*' land tenure system (1975–1991), and the current government land tenure system (1991–present). Ottaway (1977), on the other hand, explained that during imperial Ethiopia, the general pattern of land tenure system is termed 'communal tenure system'²⁰ and 'absolute tenancy', where the former used to work in the northern and the latter in the southern part of the country.

²⁰ In the communal tenure system, land was divided and subdivided between descent group members on an egalitarian basis. All descent group members of a certain lineage could claim the right to use a piece of land called *rist*, which can be inherited from a distant ancestor. Most ordinary peasants and clergy in the northern highlands of Ethiopia (communal tenure) held at least some *rist* land. However, about 10% of the peasants, including low cast artisans or *tayb*, had not owned land. The relationship between landlords and peasants in the north was not purely antagonistic because the two social classes were tied up in complex social, cultural and religious traditions and kinship. In the case of absolute tenancy, which was common in southern Ethiopia, landlords used to own large estates so that other peasants (about half the peasants) fall under the so-called 'absolute tenancy'. Hence peasants were obliged to pay at least one-third of the crop they produced to the landlord and an additional 10% land tax which went to government. Though there were some native landlords who owned land mostly through government grants, most landlords in the south were not natives (they often came from the north and government provided them with land for their services) so that there was tension between landlords and peasants which is not the case in north (communal tenure system) (Ottaway, 1977).

According to Cohen and Weintraub, there were about five land tenure systems used in imperial Ethiopia. These were kinship tenure, village tenure, private tenure, church tenure and government tenure (1975: 28). Although some terms existed in pastoralist-dominated areas, it seems the main key terms for the rest of the land tenure systems in Ethiopia were: *gult*, *rist* (kinship), communal, *diessa* (village), private, state and church lands (Hoben, 1972; Mengisteab, 1990; Adenew and Abdi, 2005).

When it comes to Amhara region, *gult* and *rist* tenure systems were common in imperial Ethiopia. Given that my focus is to explore how the communal land tenure system in Amhara region evolved through different land use policies, and to what extent it impacts agricultural productivity, the chapter provides detailed analysis based on a historical perspective and practical observations I made during my ethnographic fieldwork. As the general land tenure system in Ethiopia is so complex and beyond the scope of this study, the chapter focuses on the land tenure system in Amhara region in the sense it is perceived in the course of farmers' social lives and how this is impacting agricultural productivity as well as farmers' seed management in Kibtya and beyond.

Amhara social structure in relation to land

Land in Ethiopia has a major impact on the political system and social stratification with respect to power distribution and communication. In the smallholder traditional farming system of the northern highlands of Ethiopia, the major features of social organizations were kinship, the polity and religion, in which there were three levels of social structures, namely peasant, noble and priest (Markakis, 1975: 73–74). In the northern highlands, the Tigre and Amhara people constitute the broadest division in the history of Ethiopian society. Amhara people, in particular, remained as a dominant part of Ethiopian society so that Amhara culture and Amharic language spread into the central highlands and where Amhara were residing (Markakis, 1975; Molvaer, 1980). The ancient province of Amhara was large during the reign of King Yekuno Amlak (12th century), the founder of the Solomonic dynasty, during which time the indigenous language and culture grew to become dominant and where the process of integration into the wider society, often called Amharization (Markakis, 1975: 46) or Amhara cultivation (Molvaer, 1980: 4), took place. When it comes to social structure, political authority, social status and hereditary control, land is closely associated with Amhara people so that there were generally two social classes, i.e. the tax- or tribute-paying tenants on the

one hand and those who receive tributes (landlords) on the other (Hoben, 1973; Markakis, 1975; Molvaer, 1980). Ottaway also explained that ‘there were two distinct social classes in the northern regions, neither owning the land, but one paying dues and the other receiving them’ (1977: 88). Discussion of the land tenure system is thus an appropriate strategy to introduce Amhara’s social structure (Markakis, 1975: 74), so the following sections narrate empirical accounts of Ethiopia’s land tenure systems with particular emphasis on Amhara people and Kibtya community under the three historical periods (1930–present). By doing so, the chapter examines the complex tenure systems at various points in time to reveal their impacts on the contemporary social structure and agricultural productivity.

The pre-1975 land tenure and rural life of Amhara people

As described in the previous section, the traditional tenure systems (pre-1975) in northern Ethiopia, including Amhara region, were the *rist* and *gult* tenure systems. *Rist* was a kind of kin-based land right in which people used to claim land ownership based on heredity under certain lineage. A person who holds *rist* land or is entitled to have *rist* land rights was known as *bale-rist* and he or she was supposed to pay land tax to government. *Gult* was generally termed as the tributary system in which land rights were granted by the will of the monarch or provincial rulers to people (Hoben, 1973). A person who was granted *gult* land from a monarch or governor was known as *bale-gult*. The imperial government did not remunerate in the form of a salary until the twentieth century, so that the *gult* rights were the typical form of compensation for an official (Goody, 1980; Adenew and Abdi, 2005). Therefore, *bale-gults* were entitled to collect tribute from peasantry and had absolute rights of usufruct over all the land they held so that any peasant living in the vicinity of their estate should provide free labour as tribute for several days per year to them (Crummey, 2000; Adenew and Abdi, 2005). Mann defined *gult* as:

Gult is the right to own land without paying land tax (which is locally known as *gibir*) thereon. *Gult* means an untaxed, but delimited area of land possessed by a person of good merit or a member of the royal family (generally termed as *bale-gult*), who has a right to exercise judicial power in his *gult* area. Landowners within his jurisdiction are liable to pay tax to *bale-gult* and receive orders from him. *Gult* holders (*bale-gult*) are required by the government to give services in time of war, in administering their respective zones and discharging other official duties. (1965: 14)

In his review, Lambton (1975) states that *gult* is divided into two main systems. The first was a kind of *gult* system in which the imperial government grants land to religious institutions in perpetuity such as *Samon* in the case of the Ethiopian Orthodox Church (Adenew and Abdi, 2005). Another type of *gult* system was land held by lesser secular government officials who had judicial functions as they were assigned as local governors at different levels. The latter *gult* system is further divided into two: *riste-gult* and *maderia gult* (Lambton, 1975). The former is mainly hereditary and the latter is supposed to be granted to a person (on a temporary basis or for life) in recognition of his contribution to government. In the case of *riste-gult*, native landlords²¹ usually had *rist-land* (which is hereditary) within their *gult* holding (which is granted by government). In this case, they were entitled as *bale-gult* and *bale-rist*. There were also ordinary peasants who had *rist* land under a given landlord's *gult* so that they had to pay tribute to the *gult* holder (*bale-gult*) (Hoben, 1972).

In spite of the fact that the relationship between peasants and landlords was characterized by domination of one over the other, about 90% of farmers (Ottaway, 1977) in northern Ethiopia were natives so that everyone had a chance of getting some *rist* land to a greater or lesser extent. In this context, both ordinary peasants and landlords were tied up with either the same cognate descent group or with other social institutions in complex social relationships. Ottaway (1977) explained that in the communal tenure system, land was divided and subdivided between descent group members on an egalitarian basis. All descent group members of a certain lineage could claim the right to use pieces of *rist* land which can be inherited from distant ancestors, so that most ordinary peasants and clergy in the northern highlands of Ethiopia (communal tenure) held at least some *rist* land. She further described that the relationship between landlords and peasants in the north was not purely antagonistic because the two social classes were tied up in complex social, cultural and religious traditions and kinship (Ottaway, 1977).

Ethnographic account from Kibtya reveal the impact of subsequent land use policies (after 1975) in Amhara region in terms of how the historical *gult* and *rist* land use systems (before 1975) form the basis for contemporary social relations and agricultural productivity; because, historically, the way land was acquired, lost and held in the context of Amhara region is

²¹ There were native *gult* holders, in which case they had double benefits in terms of owning their hereditary *rist* land and land provided by government.

characterized by various systems which are embedded in complex social relations and interactions among cognate descent groups (Hoben, 1972). In support of this, Kebede argues that:

the pre-reform land tenures probably have a significant influence on post-reform land distribution ... Obviously, the Peasant Associations (PAs)would start with the existing distribution that was determined by pre-reform land tenures; it is not like a resettlement programme on uninhabited land where one can start with a desired distribution because there is no previous tenure system. Since PAs didn't take all land from their members and distribute it afresh, one should logically expect a lot to be carried over from the past into post-reform distribution. (2006: 566)

The complex nature of the *rist* system

The *rist* system was characterized by inheritance in which all descendants (whether they were peasants, non-peasants, male or female) of the distant ancestor were entitled to have a plot of family land with a usufruct right. Further, the right of using *rist* land is subject to redistribution through allocation to other members of the descent group whenever they claim and establish their lineage (Hoben, 1972). Given *rist* land is supposed to be inherited across generations, individual holders are not entitled to sell or transfer their land right (*rist* land) to others outside the descent group. Ottaway explained that:

The peasants who had rights to a piece of land were not altogether free-holders. In the first place, the land did not belong to the individual peasant, but to the descent group as a whole; it could not be sold by the individual using it; and it was periodically subject to redistribution among members of the group. (1977: 88)

Similarly, Adinew and Abdi explained that:

No user of any piece of land could sell his or her share outside the family. Neither could he or she mortgage or bequeath the share as a gift, as the land belonged not to the individual but to the descent group. (2005: 5)

According to one of my informants, a farmer now in his seventies who experienced this system in his youth, there was no specific rule as to how children would divide fragmented *rist* lands which were mostly situated in diverse locations so that parents used to assign their children to many locations where their lands were spread. In reality, this implies that there was a greater extent of people's movement seeking *rist* land from place to place in which the

balance of power relations, resource use and population pressure continuously shifted across generations (Hoben, 1972). Lambton (1975) explained that the *rist* tenure system served to move people from estates and parishes which were densely populated to ones which were not. Hence, the *rist* system provided the flexible environment for land claimants to move in a range of places in which they shared land with any community so long as they managed to establish their lineage within the targeted cognate group (Pausewang, 1983).

The role of *rist* tenure in maintaining kinship across different communities

The *rist* tenure system used to engage descent group members in a very complex process of social and cultural interaction across a range of communities situated at different geographical locations throughout Amhara region. In other words, the mobility of any person (male or female) from their original place, particularly due to marriage, may provide an opportunity for his children to establish *rist* rights (from their mother's side) within the new location. Furthermore, his children and descent group after them would have a right to return to the original place of their parents (from their father's side) or ancestors and claim *rist* right there. Therefore, displacement of a given person from the original area did not stop their or their ascending generation's right to claim *rist* land. In this vein, any person from any community or location may appear and claim *rist* land through allotment as long as they managed to establish their lineage (Hoben, 1972; Markakis, 1975; Ottaway, 1977). However, achieving claims through allotment is not an easy task and success may depend on the claimant's ability to convince and mobilize influential descent group members within that particular community where the claim was made (Hoben, 1972). In the case of Kibtya, some elders reported that convincing influential group members may include socializing with them and/or attempting to persuade them through gifts and favours. Yet, personal communication and closeness alone cannot result in having or sharing *rist* land unless a reliable case is established.

Though the blood relationship between descent groups may not be close and they may not necessarily live together and sometimes they may not even know each other (Hoben, 1972), there was strong kinship amongst the same cognate descent groups. One informant (65) in Kibtya said that traditionally there was a saying: 'he is my *rist* shareholder' meaning they share the same ancestral lineage so that they are kinsmen and share *rist* land. This reveals that sharing land creates kinship, while blood kinship leads to shared lands. Such a trend does not

persist in the contemporary pattern of land use because land is the property of the state so that no one shares land based on blood kinship or descent group. Rather, government distributes farm lands on the basis of equal sharing principles, which implies that the centrality of land as the basis for communication is changed from kin-based relationship to a formal and legally binding tenure system. Kibtya farmers perceived the current tenure system from various perspectives (see final section of this chapter), but the subsequent legislation and proclamations of land use (since 1975) have had a significant impact, particularly on social life and emotional attachment to land.

Returning to the *rist* system, there was a continuous process of settling disputes over sharing plots so that descent group members and others used to call upon witnesses. The basis of conflicts and disputes over the *rist* land right was mainly related to change of landscapes due to a continuous redistribution of land among *rist* land claimants. Hence, a given claimant used to invite knowledgeable elders on original boundaries and landscape, seeking them to play a role in arbitration. Calvo-Iglesias et al. stated that: ‘Farmers’ knowledge has shown to be useful for understanding changes that occur in the landscape at a local level, especially the directions of change in land-use and cultural practices’ (2006: 340). Such kinds of events were used as an opportunity, particularly for youth, to learn about the traditional conflict resolution and collective decision making. Pausewang (1983) stated that any farmer in a given area had a number of opportunities to witness and learn to how elders resolved conflicts arising from *rist* land disputes. In this vein, one can see that traditional *rist* system used to serve as a platform to bridge knowledge transfer between generations, because there were continuous interactions and close relationships between elders and youth in the course of redistribution of *rist* lands.

The *rist* tenure system in the context of Kibtya

Older members of the community in Kibtya recall the use of *gult* and *rist* systems, which operated broadly as in the rest of Amhara region. In Kibtya the term *gult* was called ‘*gala-meret*’ (interchangeably with *gult*) and this was a kind of land, where landlords used to encroach into common land or land given by government. *Riste-gult* in Kibtya, on the other hand, was called *gebar-meret* (interchangeably with *riste-gult*), which an ordinary farmer can have depending on his ability to establish his lineage with a descent group. As is common in other parts of Amhara region, the owner of *rist* land (*ristegna* or *bale-rist*) is supposed to pay

land tax for government and different types of tribute to landlords. Under *riste-gult*, parents were entitled to bequeath their *rist* land right to their children where the inherited land is subject to redistribution for the subsequent descent groups across generations. *Maderia-gult*, which in Kibtya is called *netela-gult* (interchangeably with *maderia-gult*) was not supposed to be inherited, but tenants used to cultivate land while paying tribute to the landlord (who granted land) during his lifetime (Mann, 1965: 14; Molvaer, 1980: 35).

One old farmer from Kibtya remembered how his parents used to pay tribute to landlords:

Gala-meret was a land mostly given by government or nobility. This culture descended from our great grandparent and the imperial government used to apply this for ages ... our grandparents used to pay *gibir* (tax) to landlords in the form of one out of each ten unit of measurement; for example if a farmer produce ten quintals of grain, one quintal was subject to be paid to the landlord who had not any contribution in the process of production.

Some informants also explained that in the traditional tenure system, landlords were entitled to have different kind of tributes such as *erbo*, *siso* and *yekul* so that tenants were forced to pay such tributes accordingly. This situation reconciles with the rest of Amhara region in which Molvaer (1980) and Mengisteab (1990) explained that tenants in Amhara region used to pay *erbo* or *siso* depending on the agreement between landlords and tenants. *Siso* tribute is defined as, 'one third of the land remaining with the first settlers (*ristegna* or *bale-rist*) after two thirds was taken by the government was his *siso*' (Mann, 1965: 78). In the case of *erbo*, the remaining land for settlers (*ristegna* or *bal-rist*) was one fourth, rather than one third. Further, the tenants (both *erbo* and *siso arash*²²) first pay one tenth to the government in the form of tax (*asrat*) and then they share the rest with the landlord according to the agreement. For example, if the tenant is *siso arash* he takes one third and if he is *erbo arash*, he takes one fourth of the remainder.

Given this, one can see that although the majority of the population in Northern Ethiopia and Amhara region were entitled to have *rist* land (Ottaway, 1977), they were not enjoying the surplus of production, as poor farmers were supposed to pay a number of tributes to nobilities such as high crown, government officials, church and landlords at different levels.

²² *Arash* is Amharic word which may be equivalent to tiller.

Furthermore, the poor had to provide free labour services to landlords such as fencing, ploughing, providing firewood and the like. As a result, the total sum effects of aristocratic administration and unbalanced tenure system led to the popular uprising which led to the end of the regime of Emperor Haile Selassie in 1974 (Abegaz, 2004; Adenew and Abdi, 2005; Deininger and Jin, 2006).

The 1975 land reform and its impact on power and social relations

The most sweeping land reform in Ethiopian history was made in 1975 by the former Marxist military government (*derg*) in which the famous and significant proclamation under the slogan ‘land for the tillers’ was made (Ottaway, 1977; Adenew and Abdi, 2005; Kebede, 2006). The 1975 land reform wiped out most land tenure systems, particularly in Northern Ethiopia. This new tenure system played a pivotal role in the transformation of Ethiopian peasants from a private to public agrarian system, whereby all rural and urban lands were nationalized.

The new land tenure system favoured smallholder farmers, as they were entitled to land use rights through equal redistribution, inheritable rights by family members and periodic redistribution in order to accommodate new households (Adenew and Abdi, 2005; Kebede, 2006). The 1975 land reform was aimed at bringing about total change in the country’s complex land tenure system and socio-political structures. In order to implement the intended objective, the military government organized peasant associations and provided them with legitimate power as it did not want to be involved in land redistribution, tax collection and arbitration of disputes (Ottaway, 1977; Adenew and Abdi, 2005).

The objective of the 1975 land reform was not solely to break down large estates owned by landlords but also aimed to bring about change in the complex social and political structure which was deep rooted over many centuries (Adenew and Abdi, 2005). The old order with its own functioning systems collapsed, but peasant associations, which were supposed to replace them, were not ready as they had to spend time preparing in terms of establishing a new communication system and new ways of working (Pausewang, 1983). They were told what to do without questioning, and learned to follow an order (Pausewang, 1983). One old farmer from Kibtya told me that he had been the chairman of peasant association in which he used to represent Kibtya and the surrounding communities. He remembered that every aspect of

management on various issues such as land redistribution, collection of land tax, administration of farmers' cooperatives, and procuring of youth for national military service (through coercive action) were implemented according to the top-down direction and guidance from political cadres. His role as a chairman was only to channel such guidance and implement what was planned.

This situation, coupled with other challenges such as growing population pressure and failure of the forced resettlement policy, mismanagement of the central economic system, civil war and repression finally resulted in failure in terms of bringing the intended improvement to rural livelihoods (Adenew and Abdi, 2005). Under such circumstances, the number of peasant associations substantially increased from 18,000 (in 1975) with four million members to 24,000 with more than 6.5 million members. These peasant associations had elected representatives at different levels of government structures including in districts (*wereda*), provinces (*awraja*) and sub-country (*kifle-hager*) where each peasant association had its own administrative structure, including armed security personnel (Pausewang, 1983).

Pausewang (1983) further described that peasant associations had the power to influence or intervene in any operation (including governmental operations) within their vicinity. For example, they could stop infrastructure development (such as road building), intervene in school operations, control movement of people, such as interrogating or putting in jail whomever they suspected as stranger. Any member of a peasant association had to register and hold a travel permit before going anywhere outside his area. In sum, the 1975 land reform raised these and many other related issues which had enormous effects on the socio-cultural, economic and political life of Ethiopian farmers.

In order to implement the new land tenure system, a governmental department called the Provisional Military Administrative Council (PMAC) was formed. The department provided a series of proclamations such as proclamation No. 31 of 1975 (which provides for public ownership of rural lands), proclamation No. 71 of 1975 (which was the proclamation of peasant associations and consolidation), and proclamation of 'all Ethiopia's Farmers Associations (AEFA) and the like. Another decree called 'Rural Land Fee and Agricultural Activities Income Tax Proclamation' was also proclaimed, through which peasant associations were empowered to collect taxes (Ottaway, 1977: 81).

When it comes to the economic aspects, although a tangible improvement in terms of increased production and peasant living conditions was observed, the 1975 land reform could not bring about a solution for urban people suffering food shortages due mainly to poor infrastructure, increased consumption rate of farmers and lack of means of transportation (Ottaway, 1977; Mengisteab, 1990). This situation obliged the government to establish state farms over peasant associations. One of the objectives of state farms was to fill the government's stores with grains and to guarantee food supply whenever shortage was observed (Ottaway, 1977). However, the mission was not accomplished for many reasons including lack of skilled manpower, bureaucracy, weather and corruption (Ottaway, 1977). Abegaz (2004) explained that the economic significance of the 1975 land tenure was limited in terms of farm productivity. One significant drawback of the failure to produce the expected economic growth was the virtual elimination of the community's traditionally autonomous local leadership because local power had been shifted from landlords to peasant associations, and the young unprofessional cadres of the former military government intervened and abolished the traditional forms of governance and institutions associated with this. In the case of Kibtya, traditional institutions play a significant role in maintaining people's social relationships and emotional attachment to their land and seeds. However, cultural activities and belief systems were discouraged and considered as illegal activities. One farmer (75) explained that:

in our culture, we used to practise many types of cultural activities including rituals and prayers such as *duaa*²³, *zar-melemamen*²⁴, *dem-mafsess*²⁵, etc. in which we used to prepare *misamis* from a range of seeds to get cured from our illness, to make rain and to socialize through feast ... we used to grow special seeds for these cultural practices and breed animals necessary not only to economic purposes, but also to be used as sacrifices in the process of rituals ... however, the military government (*derg*) prohibited our cultural activities and those who were practising some rituals used to be detained by government cadres.

Other older farmers also remember the situation in the time of military government and told me that the emergence and application of the 1975 land tenure brought about a total paradigm

²³ Duaa is a traditional prayer to prevent or cure human, animal or crop diseases. Such practice is accompanied by various forms of rituals in which different seeds, coffee and incense are used

²⁴ 'Zar melemamen' is a kind of traditional practice in which experienced individuals perform rituals to cure ill people who are possessed by 'bad spirit'

²⁵ 'Dem mafsess' is a kind of ritual practice to cure ill persons by sacrificing animals such as sheep, goat or chicken

shift, whereby the community's way of life had been changed. They see the current land use policy as the extension of the military tenure system, whereby a number of traditional farming and seed management practices are increasingly replaced by new agricultural systems supported by new technologies; and this impacts on the contemporary life ways of Kibtya's people in terms of communication (internal as well as external), kinship, interaction with other beings including animals and the environment, social and power relations and the like. Kibtya farmers have different views on and perceptions of these changes and such contested views are described in a later section of this chapter. The following section explains the subsequent land reform policies and their implications in Ethiopia and Amhara region, which were proclaimed after the new political force known as the Ethiopian People's Revolutionary Democratic Front (EPRDF) overthrew the military government (*derg*) and took governmental power in 1991.

Land reform after 1991 and its effect on the contemporary context

Following the fall of the previous military regime, the new Ethiopian government (EPRDF) adopted a free market economy, but land remained public property owned by the state. The new constitution confirms that 'the right to ownership of land is exclusively vested in the state and in the people' (FDRE, 2005) so that 'land is a common property of the Nations, Nationalities and peoples of Ethiopia and shall not be subject to sale or other means of exchange' (Adenew and Abdi, 2005: 6). Deininger and Jin (2006) stated that though the new land use legislation allowed the right to transfer land, such transferrable right was restricted within the immediate family so that the issue of tenure security is beyond the control of landholders.

In 1997, Amhara region launched land redistribution with the intention of providing better security for peasants to encourage slow development and motivate farmers to invest their capital and labour on their lands (Ege, 1997). 'Slow development' refers the situation where farmers are not interested for long term investment (labour or resource investment) on their lands (due to fear of land re-distribution or threat of expansion of urban centres) so that agricultural productivity would not create wealth. Some agree with the idea that the more long-term tenure security is granted, the more interest there would be in labour and land management efforts, because this may lead to higher levels of land induce exertion and investment to protect or enhance land fertility (Gershon and Feeny, 1991; Jacoby et al.,

2002). On the other hand, others contend that though providing tenure security and transferable land rights is good in terms of enhancing security, it does not necessarily result in a higher level of tenure security (Deininger and Chamorro, 2004; Deininger and Jin, 2006). The case from Kibtya supports the latter argument as tenure security is seen to be dependent on certain qualities of land rather than access to land per se.

For example, in Kibtya, there are two levels of land in terms of fertility: *besal meret* and *kelal meret*. The former refers to fertile land which is named by local authorities as ‘first level’, and the latter is a type of land with poor fertility, referred to as ‘second level’. Most of my informants reported that the 1997 land redistribution created conflict on issues such as who gets what type of land (in terms of soil fertility) and in which area. Traditionally (before 1975), farmers used to have access to land in different geographical locations and altitudes. This implies farmers could have both fertile and less fertile lands at different locations so that they used to spread production risk across various micro environments. Kebede explains the pattern of land distribution in Ethiopia before 1991:

Analysis of the distribution of land is complicated by differences in the quality of land. If PAs allocated land by strictly taking into account quality, land size figures will be misleading; smaller size plots are consistently of better quality than larger size plots and the difference in size distribution would systematically ignore this quality difference that compensates for size. (2006: 553)

Nowadays, however, the land policy allows land redistribution according to proximity of lands to farmers’ residences so that a farmer would no longer have access to land in different geographical locations. Consequently, it is very difficult to distribute fertile land to all farmers on an egalitarian basis. This trend has created tension because those who are given ‘second level’ land are not happy as the fertility of their land would be poor. The idea is to compensate a farmer with the ‘second level’ land by providing a bigger size than normal, but there is insufficient land to meet the demand. A woman informant explained that teenagers (below 18) were not entitled to have land so that they were not part of the 1997 land redistribution. In 2011, during which this research was carried out, I observed quite a number of young farmers who have no land to plough because they were under 18 years of age when land was redistributed in 1997. As a result, most of them migrate to towns and other places as they have no land to allow them to stay in their local areas and with their families. The son of the aforementioned informant (24) explained his situation during the 1997 land redistribution:

My father had had land enough to distribute to his children, but the 1997 land redistribution took most of his land before his children reach 18. Now three of us are more than 18 years of age, luckily two of them are teachers and they are not entitled to claim land but me, and I have nothing to plough. I only plough my fathers' land and share crops with him...how can I get married and support myself in this condition ... this is not fair...that's why I am trying to engage in trade and support myself.

This view is widespread throughout Kibtya whereby most informants agree that the 1997 land redistribution left out many youth whose ages were about 18 at that time. This reveals that the existing land policy does not predict the potential problems of redistribution in relation to the situation when teenagers join the majority.

Land certification as means of tenure security and its effect in Amhara region

Studies in many parts of Ethiopia (Deininger and Jin, 2006) including Amhara region (Ege, 1997; Deininger et al., 2008) as well as in other parts of the world including Nicaragua (Deininger and Chamorro, 2004) and Thailand (Gershon et al., 1988) reveal that providing better tenure security through the issuance of title certification is important in terms of enhancing tenure security, strengthening customary land rights, ensuring women's land ownership, and decentralizing land administration.

The land policy of the Federal Democratic Republic of Ethiopia (FDRE) stresses the frequency of land redistribution to be reduced; and following this, some regions such as Tigray declared they would no longer redistribute land; Oromia region also restricted the scope for redistribution to irrigated land (Deininger and Jin, 2006: 1254). The Amhara regional state exceptionally decided to apply land redistribution which was implemented in 1996–1997 (Ege, 1997; Adenew and Abdi, 2005). This situation eroded the confidence of Amhara farming communities about land tenure security because tenure security appears to be unreliable as government would remove it through frequent redistribution (Ege, 1997).

As the 1997 land policy could not provide sufficient tenure security, some regional states such as Amhara and Tigray came up with the idea of land registration through title certification, hoping to reverse the situation. The central argument in this new approach lies on the point that with the issuance of land use certificates, the land use rights can be codified as secure and marketable leases in which individual cultivators, collectives and state agencies

may grant long-term leases. This means farmers and pastoralists would be granted the right of transfer, sublease, inheritance or gift (Abegaz, 2004).

In order to facilitate the process and implementation of land registration and title certification, regional governments have drafted regional land policies that include land registration. The Environmental Protection Land Use and Administration Authority (EPLAUA) in the Amhara regional state was established in 2000 (Adenew and Abdi, 2005). The new structures for land administration extend up to *wereda* and *kebele*²⁶ levels, whereby the new authority is responsible for managing issues that may arise out of land disputes. The establishment of land administration aimed to enhance the tenure system by providing legal documentation to holders and promote better land management and more investment. Land registration and title certification thus potentially attract large investment whereby productivity would increase, but in the context of small-scale farming, it may not necessarily result in economic progression as is evidently observed from the African test case for tenure reform in Kenya (Jacoby and Minten, 2007). This is related to the fact that understanding the effect of tenure systems is complex and needs careful interpretation according to various geographical and social contexts.

An example from my ethnographic fieldwork in Kibtya reveals that farmers' opinions on land certification varied according to their personal views and experiences. Some farmers do not feel secure even if their land is certified because they believe that government may take it away through redistribution or some other reason such as expansion of urbanization, or development intervention. For example, one of my informants explained that though farmers have got land certificates, it does not ensure long-term ownership because in practice, some farmers have been forced to abandon their lands for use by the expanding town of Masha.²⁷ Others contend that farmers have more confidence about their land after they are issued land certificates. Most farmers who are suspicious about land certification either have their lands situated in the nearby area of Masha town or they have knowledge from neighbours whose lands were taken by the government for some reason. For this reason it can be argued that it is difficult to interpret the impact of land certification in an accurate manner. Jacoby et al. (2002) explained that 'there is a difficulty in interpretation. Longer plot tenure may indeed

²⁶ The smallest political administrative unit.

²⁷ The home town of Mekdella wereda which is about 6 km from Kibtya.

imply lower expropriation risk; alternatively, it may imply that the plot is becoming “due” for a reallocation’ (Jacoby et al., 2002: 1421).

In this vein, one can see that the current Ethiopian land policy is facing many challenges as it can no longer ensure access to land to all farmers mainly because of unbalanced settlement patterns and ever increasing population pressure. In Kibtya my research shows that land redistribution has two perspectives. On the one hand, those who have land do not like land redistribution because their holding might be further reduced for land less fertile or they might be forced to move to other sites. On the other hand, those who do not have land are keen on land redistribution as they seek a piece of land for themselves. As explained, the government land policy made clear that there will be no further land redistribution with the intent to grant tenure security through certification, but most farmers are not feeling secured even after land certification. This is because the government can still take land whenever it is needed for development purposes, including urbanization and industrialization.

Contemporary perspectives on previous land tenure systems

According to my discussions with old farmers and readings from the cited literature, it is clear that having the right to *rist* land was the significant aspect of rural life in terms of ensuring both material benefit and better social position in a traditional community. Far back in history, owning a piece of *rist* land was a symbol of integrity and this had abstract value in terms of someone’s social position within a community. Those who did not have any form of land were known as *chisegna*. Being *chisegna* in Kibtya was a kind of insult as a landless person was considered as either displaced from other places or his predecessors or ancestors did not leave any legacy of *rist* land right of which he might have been proud and enjoy the benefit. Pausewang (1983) explained that for agricultural communities who were bounded under the *rist* system, social and cultural integrity as well as religious life were important elements of personal dignity and prestige. As *rist* land right could be claimed only through descent groups, others were left behind and seen as outsiders, such as slaves or strangers or members of another ethnic or religious group (Pausewang, 1983). One of my informants (70) who had some *rist* lands said:

Chisegna was a person who had no reason to stay in one place because he was not integrated and has nothing to leave to his children; he has nothing to be proud of. Farmers were not interested to establish a permanent relationship with him such as

marriage. We used to call *chisegna* as ‘*abat yelelew*’ (a person without father or orphan).

This shows that such kinds of people are marginalized because they cannot buy land as sale of *rist* land is restricted within descent groups, so they might not be interested in staying longer in one place; rather, they would move from place to place either within the community or other locations. One very likely reason for prohibiting sale of *rist* land is therefore to protect descent groups from being marginalized. From my ethnographic data, one can see that the *rist* land inheritance system is designed to retain inheritable land for redistribution across subsequent generations, which provides moral value and prestige to the *rist* landholder (*bale-rist*) as he manages to transfer *rist* land right to his siblings. Similarly, one elder said that:

it was not customary to sell the *rist* land because the land was supposed to be transferred or inherited to the next generation. A person who sells his *rist* land would have no land to pass on to his children so that his descendants will become as *chisegna* (landless). In this case, his reputation could be diminished by the descent groups and his position both in society and family level would go down.

Hoben (1972) argues that the *rist* system does not necessarily reflect kin groups, particularly in a situation where standards of living between kin groups were highly differentiated, causing conflict and various forms of disagreements. In the *rist* system, being within the same descent group sometimes creates disagreement or conflict when fertile *rist* land in a good location is sought. Some of my informants also reported that the *rist* system was so complex that in some cases members of descent groups used to quarrel and kill each other. Pausewang (1983) also asserted that there were stresses and conflicts between opposing *rist* claimants, but on the other hand, he asserted that the *rist* kin groups used to protect their descent group from getting mixed with outsiders, so they had to keep the purity of the family clan and ensure long-term control over their *rist* land. Further he said:

The very principles of *rist* distribution of land indicate that the *rist* community once controlled its own resources, preventing its members from being exploited – and from exploiting each other. (Pausewang, 1983: 177)

I argue that kinship would be established through a complex interaction which includes disagreements that could be resolved with traditional arbitration and reconciliation as part of building kin relations. Hence the *rist* system can be considered as a building block of kinship

because descent groups were engaged in ever continuous interaction and communication to ensure the retention of the power to control *rist* land within their descent group members. Therefore, the system worked well for *rist* kinsmen's own sake. According to my informants, disagreements and conflicts amongst *rist* kinsmen were resolved through the established traditional systems such as council of elders locally known as *shengo*, or *shimagle*. Furthermore, the culture of protecting descent group members from outside intervention indicates the intention of maintaining kinship within *rist* holders.

Under the kin-based *rist* land tenure system, particularly in the northern part of Ethiopia, only 10% of the population was landless (Ottaway, 1977), but that does not mean that all *rist* landholders were creating wealth. Most *rist* landholders were very poor because they had to provide their surplus production and other forms of tributes to landlords. This situation led many farmers to be impoverished. However, farmers had a social obligation to help one another and poorer community members (*buagaches*)²⁸ used to get some subsistence through culturally integrated social security based on moral values in relation to belief systems. On the other hand, those farmers who did not have land and were not able to get contractual work for whatever reason (mostly due to health or old age) used to remain as beggars, locally known as *buagach*. Some of my informants explained that those beggars used to show up at *awdima* (a place where farmers thresh crops), particularly during harvesting time, so that farmers used to offer them some grains. One old farmer asserted that:

As I told you earlier, in the old days, landholding was dominated by a few landlords and a number of people didn't have land at all. These people used to beg some grains during harvesting time and made their living out of this kind of donation among other means of living. In the contemporary situation, everybody has got a right to have land. Though our young children don't have land due to scarcity of farm land (caused by overpopulation), every farmer is supposed to have land. For this reason, nobody is going to beg as the legal status of all farmers (in terms of land right) is in the same position.

Based on discussion with my informants, I argue that then the 'begging' at *awdima* was part of a social support network (Wellman and Wortley, 1989), in which all members of Kibtya community willingly offer some grains to those who seek support. According to my informants, the relationship between farmers and *buagaches* was not based on reciprocity or

²⁸ *Buagaches* are individual beggars (*buagach* is the singular form).

other forms of hierarchy (at least not as much as the contemporary hierarchy between beggars and those who donate); rather, farmers used to respect *bugaches* and give them some space in social events, discussions and related communal activities. In this vein, informants further explained that although *bugaches* were categorized in the lower social class, they were treated with all due respect and it was believed that denying some support (grain) to *bugaches* may take blessing away from surplus production. Such kinds of social security were also observed by (Molvaer, 1980) in the social life of the agrarian community in Ethiopia. He mentioned that ‘it is a social obligation to give food to the poor and hungry’ (Molvaer, 1980: 138).

In my ethnographic fieldwork, one of the striking observations was that the historical self-supporting social system is increasingly transformed into dependency on government aid programmes such as the safety net programme, the subsidized seed supply and chemical fertilizer and the like. In order to compensate for the destitution of land and related challenges of rural life, the Ethiopian government often applies different aid programmes in which farmers (those who have no land, in particular) are provided with some grains and they are paid in cash for their work in terracing, maintenance of roads, mud dams, etc. I do not oppose the principle of ‘food for work’ as long as it is not making aid recipients dependent only on outside support. In practice, it seems the government aid programme is changing most farmers’ behaviour to expect support in every aspect of life, including manageable challenges. This trend is gradually deteriorating farmers’ confidence at the individual level and social power at the institutional level in terms of solving their own problems. Farmers’ views on this and on other government development approaches varies depending on their status (i.e attitude to local administration, membership of political party, and so forth). (See detail in chapter 4).

The current land use in Kibtya

A survey in 2,127 households conducted in three zones of Amhara region (South Wollo, North Wollo and Wag Himra) in 2003 reveals that a total of 14% of the households were considered as destitute of which 12.8% did not have access to land (Sharp et al., 2003). As revealed in the introductory chapter, the general physical feature of Kibtya area is characterized by flat, undulated, and mountainous landscapes with a range of land use

systems, and there are also some hilly areas which are protected from human activities with the intention to regenerate natural resources (see Figure 3.1).



Figure 3.1: Different views of farmlands in Kibtya

According to Mekdella wereda office of agriculture, land in Kibtya can be used by an individual, group of people or community, government agency, social institution or others with a legal personality and having a possession right over rural land. In such context, the individual landholding in Amhara region is a minimum of 0.55 hectares while the maximum landholding reaches only up to 0.82 hectares (Sharp et al., 2003). The situation in Kibtya is not far from this, as the minimum individual landholding (which is given to non-married, locally known as *late*) is 0.25 hectares and a maximum (for married ones) is 1.5 hectares. Implementation of regional land use planning is operationalized under the rural land administration office which is organized at all levels including the region, zones, *weredas* and *kebeles*. The rural land administration is also responsible for resolving all kinds of disputes which may arise between rural landholders at *kebele* level, as these are the smallest political administrative unit in which land distribution takes place. Table 3.1 shows land use practice in Kibtya area.

Table 3.1: Total area and land use practice of Kibtya area

Practised land use system	Area of land (ha)
Cultivated land	1988.01
Treated bush land	383.24
Irrigable land	332.41
Villages	755.74
Barren land	54
Forest land	530.12
Grazing land	110.36
Water body	10.12
Total area	4164

Source: The agricultural office of natural resource conservation and utilization process department, Mekdella wereda (2011)

As revealed in the table, the agricultural area covers a significant portion of the total area but in practice, farmland is still scarce. Some farmers are also beneficiaries of irrigation through diversion of a small river by a small dam constructed by government/NGO cooperation a few years ago. The villages in Kibtya are distributed into different sub areas (*gots*), namely *abichu*, *ali-bahir* and *aba-wasu gots*. Forest lands are usually situated in the mountains and some portions of hillsides are dominated by rock, so they cannot be used for agriculture, grazing or plantation. Grazing lands are mostly located in the plain fields where the river (Tulite River) and the small dam are located.

Challenges of the current land tenure in Kibtya

The new land administration system in Amhara region coupled with population pressure, land scarcity and land redistribution has been changing local practices in Kibtya. One of my informants explained that population growth and expansion of urbanization influences the size of their landholding whereby their day-to-day life in relation to farming activities is gradually changing. Similarly, Adenew and Abdi (2005) state that among many concerns, the national discourse on land involves worry about the growing competition for land to implement expansion of urbanization. With respect to the problem of land scarcity, one informant reported that his father had 4–5 houses and these houses are shared amongst all his children, but when it comes to sharing land, all children (seven of them) had to share only what their father holds for himself, so that each child ends up with a limited size of land or none at all. As a result, many farmers, especially young ones, become jobless, which leads

them to move to towns and other places in order to find a ‘better life’. Scarcity of land also creates a problem for growing diverse seeds, as some informants reported that the culture of growing different seeds has been eroded because of this. I also observed that despite their intention, farmers could not keep or grow many types of seed though seed diversity is the main security of local food supply. Use of seed diversity is not only for consumption but also for many other social and cultural purposes. Diverse seeds also serve as local security for regular seed supply, particularly in the context of vulnerable weather conditions (see details in Chapter 6).

One informant, a teacher who used to help his parents with farming, explained that most farmers, including his father, are losing their interest in growing diverse seeds for two reasons. One is that their landholding is small so that they should seed one or two types of priority seeds which they would use mainly for consumption. The second reason is that a piece of land with a particular type of soil often may not be suitable for a range of seed diversities. From discussions with a range of farmers it is evident that the long-term experiences of farming practices in Kibtya are integrated under the system of spreading production risks across different farmlands with various soil types and micro environments. Empirical data also reveal that such culture of growing different seed diversities is being threatened due to the current land use practice, including scarcity of land, and farmers’ inability to access land in different agro ecological areas due to the current land policy.

Contested view of Kibtya farmers on the current and traditional *rist* land tenure

Farmers’ view on the historical *rist* system in relation to the current land tenure is contested and there is no general consensus. Some farmers, particularly old ones, explained that they used to have a pride in *rist* land, as it used to provide them with integration, security and identity. They argue that *rist* land rights used to provide more than material benefits, in which land was the very important means of integration and nexus to maintain social relations and kinship. Such an attitude is also common in other parts of northern Ethiopia as revealed in a quote from the Tigre people who claim ‘as land is fixed by nature and cannot be moved, a *ristegna* cannot be moved from his *rist*’ (Markakis, 1975: 76). This group of farmers is concerned about the existing land tenure system in which the role of land as means of integration, social tie and kinship is gradually deteriorating because land is subject to be taken away by government whenever necessary for development purposes, including

urbanization and industrialization. Further, land is increasingly scarce and limited to specific locations so that farmers cannot grow diverse seeds which are the basis of economic and non-material aspects of life. In the context of the traditional *rist* tenure system, farmers were free to move from place to place through use of their right to *rist* land across a range of geographical locations. Such flexibility helped farmers to maintain seed diversities because they used to get at least some yield in one location if they failed at other sites; or they used to get some yield from a particular seed if they failed from another seed diversity. In the contemporary context, the government is encouraging and putting pressure on farmers to grow HYVs which are meant to be more productive. As a result, farmers are tending to grow the newly provided seeds and abandoning the traditional seed diversities. One informant explained that farmers, including his father, used to practise crop rotation, which maintains the fertility of the soil. His father used to practise the fallowing method so that he had to shift between farmlands in order to produce sufficient yield, and this was made possible because of flexible *rist* tenure system. The same farmer told me that nowadays landholding is very limited so that farmers grow only certain types of seeds. For him, this is dangerous because, if the planted seed fails for some reason, he would end up empty handed as he did not have sufficient land to grow alternative seeds.

Other farmers' general valuation of the existing land tenure is associated with enhancing productivity. In this regard, some farmers believe productivity of their lands has been increased compared to the old days. They argue that the changed farming pattern associated with limited landholding provides opportunity to learn how farmers should intensify farming and be productive within a limited piece of land. In support of this idea, one informant said that in the contemporary context, farmers have acquired a better understanding about their land particularly in terms of maximizing production through use of inputs (both chemical and natural fertilizer), modern seed varieties, and agricultural technologies such as Broad Bed Marker (BBM) technology, which helps to make waterlogged lands productive. Similarly, another informant underlined that 'I must say that though currently our landholding is very limited, we improved the productivity of our land by use of improved technologies such as High Yielding Varieties (HYVs) and fertilizers'. Further, another informant also explained that he is maximizing his land's production capacity through use of inputs and fertilizers so that he is getting better production though his landholding is small.

Regarding the issue of seed diversity, proponents of the current land tenure system do not agree with the association of growing seed diversity with size of farmlands. They argue that, in the *rist* tenure system, farmers used to grow limited types of seeds (though they had sufficient land) because there was no concern about seed diversity as farmers could get seed through exchange with other farmers or in the local market when they needed to. In the current tenure system, farmers often grow as many seed varieties as possible within their limited lands because they do not have much option to look for exchanges, as every farmer grows only for his own need.

In general, opponents of the traditional *rist* tenure system argue that although the *rist* tenure system was good in terms of keeping kin groups or descent groups together, it had two limitations. The first limitation is that though ordinary *rist* holders owned some land plots, they were forced to spend most of their working time providing free labour to landlords and they had to pay many tributes. In this vein, ordinary *rist* landholders could not generate wealth, which led most farmers to a greater extent of impoverishment. As a result, they had to work for landlords (to get subsistence) or migrate to other places. One farmer agreed with this and explained that given the fact that *gebars* were aware that most of the share of production would go to landlords, they were not interested in practising intensive farming such as weeding, quality harvesting and maximizing production. Further, one informant describes that: ‘our grandparents had larger sized land holdings compared to the contemporary ones but they were not productive because, they were *gebars*²⁹ whereby they had to provide most of their production to landlords; so that they were not interested in making the land productive’. Regarding the second limitation of *rist* tenure, those farmers who had no land (*chisegna*) were marginalized both from economic and social perspectives. The only survival strategy for *chisegnas* was to work on the landlord’s *gult* or *rist* land on the basis of contractual agreement in which they may receive one tenth or less share of the total produce and they had to pay feudal dues such as free labour and other tributes.

Taking into account all these contested views and the range of perspectives on complex relationships between land, seeds and people, one can see that land is a very complex matter and central to the well-being of farmers not only in terms of production but also social

²⁹ Though they had *rist* lands, *gebars* were supposed to pay tribute to nobilities and *gibir* (tax) to the government.

relations and kinship which are integral parts of rural life (see details in Chapter 7). From empirical accounts discussed in this chapter, one can see that social relations of Kibtya farmers are changing along with changes in land use practice. For example, if one relies on obtaining diverse seeds through traditional seed exchange, one is at risk because there is insufficient land for farmers to grow many seeds to offer for free or in the form of seed exchange. Hence, one has to find another way such as buying from the local market (which is expensive compared to the traditional exchange system) or growing some seed diversities for one's own needs. This implies that the traditional pattern of social relations is gradually changing from kinship-based exchange to market-based exchange systems. Table 3.2 chronologically summarizes the main features of Land tenure in Ethiopia particularly northern Ethiopia

Table 3.2: chronological summary of land tenure in Ethiopia

Forms of different land tenure systems	Descriptions and main features
The pre 1975 land tenure	Since 12 th century, Land was owned by subsequent monarchical governments, Ethiopian Orthodox church, nobility and native land owners (particularly Northern Ethiopia).
Rist system	The <i>rist</i> system can be summarized as a kin-based tenure system which was characterized by inheritance. Descendants of certain lineage (whether they were peasants, non-peasants, male or female) were entitled to have a plot of family land with a usufruct right.
Gult system	<i>Refers</i> to the traditional tributary system in which land rights were granted by the will of the monarch or provincial rulers to people. It also used to be acquired by encroachment usually by local officials or nobilities in situations where <i>gult</i> -land (often government land) is not possessed by individual land owners.
Riste-gult	Land owners may have dual land use right in which they may acquire <i>rist</i> as well as <i>gult</i> land rights through heredity and will of provincial or encroachment which would later approved by government
Maderia gult	This was very common in Kibtya in which land owners might grant land to peasants and tillers in turn used to pay many forms of tributes including labour and crop yield. Such land use right was supposed to be used only for the life time of the tenant (not to be inherited)
Samon	This was a generous grant of government Traditional land use right granted by government (Ethiopian Orthodox Church) the extent to which the church used to claim a significant proportion of land all over the country particularly in the Northern part
The 1975 land tenure	<ul style="list-style-type: none"> • This was the significant turning point land reform in Ethiopian history as it shifted the ownership and land use right from nobilities, land lords, church and imperial government to farmers through peasant associations. • Peasant associations took power of land distribution Cooperatives used to use quality and larger portion of agricultural land • State farms established to fill government stores and overcome the challenge of food supply particularly for urban people
Land reform after 1991	<ul style="list-style-type: none"> • Land is claimed as a common property of Nations Nationalities and Peoples of Ethiopia. • It is distributed to farmers arguably on an egalitarian basis. • Regional states are entitled to administer land issues according to their respective situations in which there is no uniform tenure system throughout the country. • Land reform is restructured and certified (northern part of the country) to ensure tenure security • Agricultural land increasingly scarce and degraded due to over population and expansion of urbanization <p>High input agriculture such as chemical fertilizer, improved seeds, and new technology is introduced in order to mitigate production deficiency due to scarce land. This impacts social relation and communication within and outside of Kibtya community</p>

Conclusion

The issue of land tenure is intertwined with the social, cultural and political history of Ethiopia since the 12th century. This chapter examines the history of land tenure in Ethiopia since 1930 with the focus on how subsequent land policy changes have influenced the contemporary rural livelihood including social and power relations, land use and cultural practices as well as internal and external communication. The chapter reveals that access to land, particularly in the context of Amhara people, is very significant as it is intertwined with socio-cultural, economic and political aspects of rural livelihood. Kin groups in Kibtya used to have emotional attachments despite the different locations they live in because they shared *rist* land which showed they stemmed from the same ancestral lineage. Therefore, as one of my informants related, people used to say ‘he is my *rist* shareholder’, which implies that social relations and communication under the traditional *rist* tenure was based mainly on formation of kin groups in relation to land. The perception of land therefore was more than just its economic value, so that farmers used to have emotional attachment to their *rist* lands.

During the kin-based *rist* tenure system, farmers had to pay many tributes to landlords so that they were not motivated to invest their labour and resources to increase production, despite the larger size of land they had. In the contemporary context, the pattern of productivity is better than the old days (through use of agricultural technology such as chemical fertilizers and HYVs) because farmers are motivated by having the right to use the surplus for themselves. In contrast, although some farmers are interested in having an increased yield through HYVs, they are concerned about the problem associated with land scarcity because the existing land holding (0.25–1.50 ha per person) does not allow the growing of diverse local seeds.

Subsequent modifications of land policies in Ethiopia have brought substantial changes in terms of social relations and communication within rural communities. Though land is still the most significant part of rural livelihood, the economic aspect of land is dominating because government is increasingly promoting land for its economic value per se. This idea seems to be associated with the fact that land is increasingly scarce so that promoting productivity within limited landholding has gained priority. In this trend, High Yielding Varieties (HYVs) are drawing government’s attention, whereby they tend to replace local seed diversity despite the significance of having diverse seed being very important for

farmers. Landholding or farm size and location is significantly associated with seed diversities which are grown not only for economic purposes but also farmers use them to fulfil their diverse cultural and spiritual needs such as rituals, prayers and other related practices. In order to implement such practices, farmers of different age groups and gender used to gather, socialize and maintain kinship. Children used to engage in such cultural practices and associated farming activities as well as socialization at various levels so that they had a number of opportunities to learn through practice.

In sum, the power and social relations as well as creation of wealth and life in general are highly attached with access to land even in the contemporary context of Kibtya. The main challenge of the current land tenure system includes (among many) its inability to accommodate seed diversities which are the basis of rural life in terms of providing the necessary nutrition as well as fulfilling the multifaceted socio-cultural and spiritual needs of farmers. Based on ethnographic accounts from Kibtya, I argue that as the land use pattern is highly changed through the various phases of tenure systems between 1930 and 1991 and such trends of restructuring farmlands seems to be ongoing, farmers in Kibtya are engaged with continuous adaptation to the contemporary agricultural system because one cannot reclaim the traditional *rist* lands or large estates under the current land policy and population pressure. Johnsen (2004) explained that farm adjustment is the ongoing process which changes the ‘heterogeneity of farm structure and household labour arrangements, together with the evolution of local cultural norms so that it is unlikely farming practices would revert to former patterns’ (Johnsen, 2004: 420). This implies the changing pattern of management system (through context-based experiential knowledge) of local resources to fit into the contemporary contexts. This is evinced by empirical data throughout the chapter in which the changing attitudes of farmers to land is not about use and benefits of seed diversities under traditional *rist* land that is undermined by the current land tenure, but rather the issue is how seed use changes in the context of broader changes in land tenure at national level.

Chapter 4: Smallholder agriculture and the impact of intervention in Kibtya community

Introduction

This chapter focuses on the interactions between Development Agents (DAs) and Kibtya farmers under the contemporary agricultural extension programme. This focus highlights how government policies intersect with practices and understandings of farmers who are the targets of specific programmes and interventions. The current Ethiopian government has been evolving a range of development plans and strategies in order to achieve its objective of Agricultural-led Development Industrialization (ALDI). ALDI emphasizes increasing agricultural productivity through intensive use of high input agriculture such as chemical fertilizers, improved seeds and other relevant modern technologies. The implementation of this approach is mainly through the agricultural extension programme in which Development Agents (DAs) play a vital role. However, the proposed strategy is constrained by (among many) the inherent complexity of communication between farmers and external agents, particularly DAs. This chapter explores in detail accounts of interactions and communications mainly between DAs and Kibtya farmers. It shows the significance of understanding socio-cultural aspects of community livelihood in the course of applying forms of outside intervention.

Based on analysis of ethnographic data from Kibtya, the chapter contextualizes a range of theoretical discourses in intervention and development (Escobar, 2011) as well as the significance of agriculture to economic development (Johnston and Mellor, 1961; Hayami and Ruttan, 1971; Hazell and Diao, 2005) at the wider level. The chapter draws on some case studies from Kibtya to reveal how forms of actions at local level could impact upon the overall relationship between external agents (including DAs) and communities which replicate to the performance of agricultural productivity. By doing so, the chapter highlights the fact that policy formulation, planning and implementation of development intervention should consider the specific socio-cultural and contextual aspects of smallholder farmers, because farming in smallholder agriculture is often characterized by a complex interaction between natural and social environments in which livelihood strategies are highly interwoven

with farmers' social life; kin relations, communication, resource sharing and local knowledge.

The first section of this chapter gives an overview of the nature of smallholder farming and the role of agricultural productivity in economic development. The chapter then draws on accounts of Ethiopian agriculture and staple food production in the context of smallholder farming by evincing historical perspectives and current trends. This is followed by a brief explanation of the direction of Ethiopian agricultural policy, external intervention programme, and its impact on smallholder productivity. The subsequent sections focus on interactions between DAs and Kibtya farmers with the focus on the importance of considering local knowledge and socio-cultural as well as environmental aspects of farmers' livelihood in the course of implementing planned intervention.

The role of agriculture in economic growth for the poor

Agriculture's role in development and economic growth has been generally recognized by a number of scholars in the sector (Peacock et al., 2004). However, there are differentiated views towards agricultural policy approaches (Binswanger and Deininger, 1997). Some suggest that agriculture needs to be mechanized and high technologies should be applied so as to achieve economic growth (Johnston and Mellor, 1961; Hazell and Diao, 2005). Others suggest an integrated strategy in which the local-specific and experiential knowledge-based agricultural system would be integrated with the scientific and research-based approaches (Beshah, 2003; Ruben, 2005; Byerlee et al., 2009). In either case, the trend reveals the fact that agriculture would play a pivotal role for economic growth, particularly if the economy is at an early stage of growth (Johnston and Mellor, 1961; Hazell and Diao, 2005). When it comes to the context of developing countries, such as Sub-Saharan Africa, where rural areas account for 70% of the population and 20–40% of GDP, the role of agriculture remains significant and serves as a food source as well as export-led economic growth (Byerlee et al., 2009; Godfray et al., 2010).

According to Byerlee et al. (2009), in the 1950s and 1960s, classical theorists did not appreciate the role of agriculture in economic growth due to perception of its low productivity compared to an industrial-led economy. Since the beginning of the 1960s, encouraging experiences of the potential of agriculture for development has emerged from

Asia, which led to structural transformation and the recognition of agriculture as a driver of economic growth (Byerlee et al., 2009). In this regard, Asian experiences profoundly contribute to the leading role of agriculture, and scholars recognize the rapid transformative nature of agriculture from a traditional to that of a modern sector (Hayami and Ruttan, 1971). Johnston and Mellor (1961) explained that the process of transformation and adoption of science-based technology would enhance productivity through increased agricultural output and contribute to overall economic growth. Yet, the role of agriculture for development needs to be given particular attention as this sector accounts for a significant proportion of the world population who are mostly poor and mainly living in rural areas. Byerlee et al. explained that:

Given the sheer size of the agricultural sector with an estimated 2.5 billion persons dependent on this activity, with three-quarters of all poor people living in rural areas, and with agriculture as the largest user of natural resources, it is increasingly recognized that realization of the global development agenda will not be possible without explicitly focusing on the role of agriculture *for* development. (2009: 3)

Triggered by the food crises in 2008, the current trend reveals that the role of agriculture in economic growth has been attracting the attention of development practitioners and donor communities, whereby the World Bank committed to double its support by 2010 (Byerlee et al., 2009). Though the agricultural sector is yet to be developed in terms of achieving economic growth, evidence shows that its annual growth rate in Africa is 3.7%, which exceeds the non-agricultural growth during the period 1993–2005 (Byerlee et al., 2009). This shows that the problem of agricultural growth in Africa is associated with incompatibility with population pressure rather than annual growth. Hazell and Diao stated:

Despite widespread pessimism about the past performance of the agricultural sector in Africa, on a continent-wide basis the sector has actually grown at a respectable 2.5% per annum since 1980, compared with 1.2% for industry and 2.5% for services (2005: 25)

This is also supported by Peacock et al., who explained that ‘for the last 40–50 years, agriculture contributes to the increment of agricultural production averaging 2.3% from 1965–1998 in Asia and particularly in Africa; much of this growth has been in smallholder agriculture’ (2004:16). Evidence from Southeast Asian countries such as Indonesia, Malaysia and Thailand as well as Taiwan, Republic of Korea and China reveals that supporting

smallholder agriculture resulted in growth in agricultural output. According to Binswanger and Deininger, these countries ‘reduced agricultural taxation in the 1970s and started to support smallholders ... they also established favourable macroeconomic policies, invested in rural infrastructure and social services, provided research and extension services, and supported viable smallholder credit systems’ (1997: 7). The role of smallholder agriculture in the African context should not be underestimated as it has played a vital role in achieving broad-based economic growth for the last 40–50 years (Kisamba-Mugerwa, 2005). On the other hand, there is a growing concern with respect to the way that agriculture is developing in Africa and beyond. Ruben states that:

Agricultural research systems in Africa have produced technologies that are inappropriate to the factor endowments (such as land, labour and capital) of most LFA [Less Favoured Areas] smallholders. Often there has been too much emphasis on increasing land productivity and not enough on the need for sustainability, stability (reduction of annual fluctuations in output) and multiple outputs (crop diversification in order to reduce income risks). (2005: 88)

This shows that the future of agriculture for development is spearheading towards a market-oriented and high input agricultural system, whereas alternative local agricultural practices, which are mainly integrated with social, cultural and agro-ecological situations, seems underestimated by donor communities and the developed world. Hazell and Diao also explained that there is a significant influence to shift the direction of African development towards industrialization:

Scepticism about African agriculture was observed during the past decades, which is related to the emergence of globalization and free market economy with development ideas such as importation of substitute grains and food stuff to shift the focus of African countries towards industrialization; diversification of income for rural communities through the increased rural-urban mobility and migration; expansion of small farms to ensure viability towards global market etc. (2005: 25)

It seems that many African governments are increasingly adapting the idea of industrialization for economic growth and development by applying technology-based and market-oriented agricultural systems. However, agriculture in Africa is often characterized by smallholder farming which arguably is not suitable for growing surplus tradable cash crops, because smallholders are often engaged in ‘diversified agriculture on relatively small farms in areas of dense populations’ (Netting, 1993: 2).

One challenge of smallholder agriculture (among many) in relation to growing tradable agricultural crops is remoteness and poor infrastructure, which results in high transaction costs. Some have suggested 'vertical integration', in which smallholder farmers could be involved in production of commercial quality products (Delgado, 1999; Byerlee et al., 2009), intensification of production systems, specialization, access to information systems, sharing of research and knowledge. Kisamba-Mugerwa (2005) suggested that developing a linking strategy between farm-gate and marketplaces is an important part of enhancing smallholder production. However, promotion of high input agriculture in smallholder agriculture needs to be applied according to the very nature of locally specified contexts, because poor farmers in remote regions are entirely reliant on locally integrated socio-cultural and ecological systems in which they maintain sustainable production rather than surplus production. This kind of system has been working in the context of 'high population density, low opportunity costs for labour, exclusive reliance on internal inputs' (Ruben, 2005: 88). In the context of smallholder agriculture, where farmlands are distributed among family members, growing tradable crops on a larger scale is constrained by a scarcity of land and climatic challenges.

In such situations, individual landholding for most smallholder farmers, particularly in Africa, would not be more than a hectare or two, so that surplus production for market might not be realistic. For example, over 60% of Ethiopia's farmers' landholding is less than a hectare (Ethiopian Agricultural Transformation Agency, 2010) and this goes as low as 0.25 ha (for an unmarried farmer) in the case of Kibtya. Though land is distributed on the basis of an equal sharing principle, farmers often redistribute their share to their children because land redistribution has not been carried out since 1997 in Amhara region (Adenew and Abdi, 2005). Through continuous sharing of land amongst family members, the landholding of individual farmers is resulting in fragmentation of land. This implies that designing agricultural production for commercial purposes has little value because the economics of rural households in smallholder agriculture works in such a way that farmers often participate in the market to sell some agricultural products and artefacts. Such a subsistence economy is also supported by off-farm activities, where farms could be involved in full- and part-time occupations such as 'processing and selling food, cottage industries like weaving, basketry, pottery and sidelines in trade, transport and construction' (Netting, 1993: 15). Hence, altering smallholder agriculture in search of profit could be disrupting fragile ecosystems (Gudeman, 1992).

Further, production of commercial (tradable) crops in the context of smallholder agriculture would not be effective as the sector would lack negotiating capacity on prices in the global market. Related to this, Hazell and Diao (2005) argue that the small farm production system offers an efficient and pro-poor option for agricultural development; however, it seems not to have the capacity to compete with rich country farmers in such a globalized world and market-oriented economic situation, because rich farmers who have access to the global market would have the opportunity to negotiate pricing of their high value products, whereas smallholder farmers are left behind. Moreover, in regions such as Sub-Saharan Africa, growing large-scale tradable crops (surplus production) would be difficult where smallholder agriculture prevails and farmlands are scattered across different agro ecological zones (Hazell and Diao, 2005). Taking this argument even further, achieving economic growth should not always be associated with tradable and market-oriented agricultural production, as general economic growth has also been attributed to other aspects such as staple food production for domestic consumption (Byerlee et al., 2009: 4). Staple food production is the main sub-sector of agriculture which is critical for general economic growth, as most African governments suffer a shortage of foreign exchange for importing substitute foodstuff and cereals (Byerlee et al., 2009: 4). The significance of staple food production is found to be crucial in Asia too (mainly through high yield varieties and external inputs), whereby 'China's and India's staple food production is more than a third of agricultural output and more than a half in Vietnam' (Byerlee et al., 2009: 4).

Even in the context of low input and smallholder agriculture, there have been success stories in Africa in which farmers have managed to increase agricultural productivity. For example, referring to a case study in Zambia, Peacock et al. explained that a farmer had been successful after a local partner provided him with training in various methods of soil and water conservation, so that he managed to increase his agricultural production using natural fertilizer (compost), chicken and green manures, and preparing his fields with zai holes, a minimum tillage technique (2004:17). However, smallholding should not be taken as a panacea as farmers in this sub-sector are criticized for their management practices in which some argue that about 85% of land degradation occurs in relation to soil management in family farms, where smallholder farmers clear the land as part of preparation for ploughing, which makes it vulnerable to soil erosion (Bowen et al., 2003). Empirical data from Kibtya shows that such problems are often related to impoverishment, whereby poor farmers are

forced to cut down trees for firewood, construction on cottages and/or generating income. It is also related to tenure security, whereby some farmers are not willing to invest their labour in soil and water conservation activities under the existing land tenure system.

Ethiopian agriculture

In Ethiopia, about 85% of the population depends on agriculture and 71% of the total land area of 1.22 million km² is suitable for agriculture, though not all of it is currently cultivated. More than 80% of Ethiopia's human population and 60% of its livestock population is significantly supported by this sector so that it accounts for a significant portion of the economy, which constitutes 43% of gross domestic product (GDP), 80% of export value and employs 84% of the population (Belete et al., 1991: 160; Beshah, 2003: 27; Teshome, 2006; Ethiopian Agricultural Transformation Agency, 2010: 1). Beshah (2003) explained that the two main patterns of Ethiopia's agriculture are: mixed crop–livestock production and pastoralist-based production, in which there are four main farming systems: the seed-farming complex (the focus of the entire thesis), the enset-planting complex, shifting cultivation, and the pastoral complex. Mixed crop and livestock production system is common in the northern and central highlands of Ethiopia, which constitutes about 45% of the country's land mass, and this kind of farming in Ethiopia has a long history dating back to the Axumite kingdom (100 BC–1000 AD) (Beshah, 2003: 37). Regarding agro-ecological zones, Ethiopia has five such zones, namely High Potential Perennial Zone (HPP), High Potential Cereal Zone (HPC), Low Potential Cereal Zone (LPC), Agro-Pastoral (AP) and the pastoral (P). Amongst these, the Ethiopian highlands are characterized by the first three zones (Bishaw, 2001:10; Beshah, 2003: 28).

Table 4.1: Ethiopian highland agro-ecological zones and area coverage

Zone	Climate	Area ('000 km ²)	Growing period (No. of days)
HPP Zone	Warm and more humid	144	Mainly > 240
HPC Zone	Intermediate rainfall	131	Usually > 180
LPC Zone	High variability, occasional drought	150	Mainly 90–150

Source: Adapted from Bishaw (2001) and Beshah (2003).

Historical perspectives

Despite the extended and large farm estates (particularly those of the nobility, Church and *gult* landlords), Ethiopian farmers were not especially productive during the imperial regime (1930–1974). Among many reasons, this was mainly due to the tenants' lack of interest in investing their labour on the properties of landlords, as the large portion of production used to be taken away in the form of land tax to the government and many types of tribute to landlords (see details in Chapter 3). After the fall of the imperial regime, the former Marxist military rule (1974–1991) established mass organizations at every level of the administrative structure, from the regional up to the lower and organizational unit. These organizations such as Peasant Associations (PAs), Producers Co-operatives (PCs) and Service Co-operatives (SCs), were purposely created as agricultural and off-farm productive and service delivery organizations (Tommasoli, 1996; Rahmato, 1993). In addition to the responsibility for land distribution, PAs were given authority to implement different government policies such as 'villagisation, forced resettlement, tax levies and contributions from peasants' (Beshah, 2003: 32). With respect to how the valuable resources including the best land were allocated to these mass organizations, Hoben explained that:

PCs were organized with the backing of party cadres and Ministry of Agriculture officials, by 'progressive' members of a PA ... They were able to appropriate the best land in each community and valuable natural resources, such as pasture land, water points and the like, for their agricultural and other enterprises. (1995: 1012)

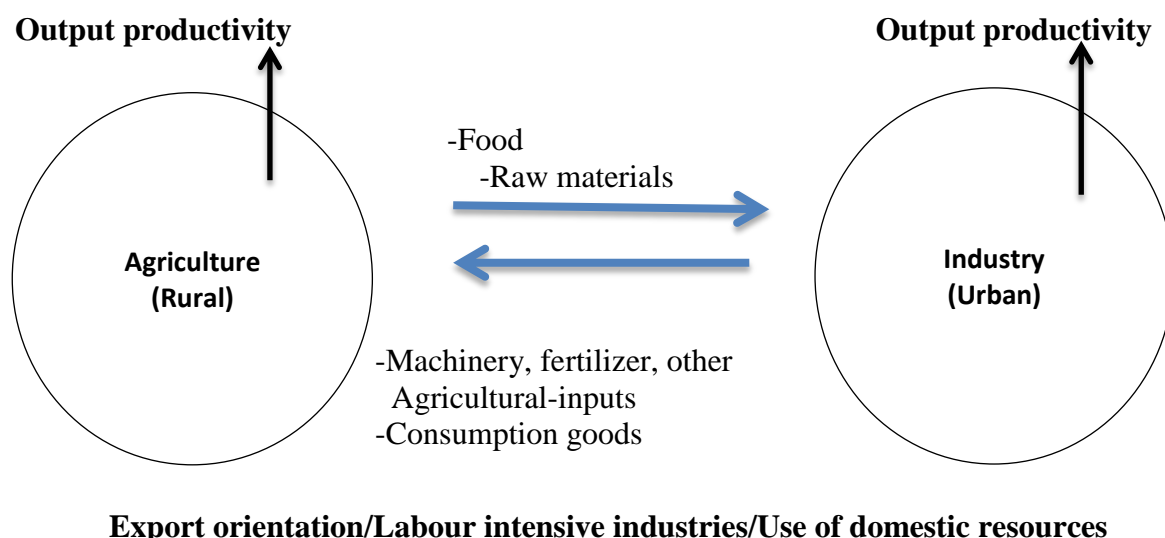
Coupled with the mentioned challenges, coercive recruitment of youth for military service had created tension and mistrust between government and farmers, particularly between PA authorities and farmers. In those days, many youths were taken away from the lines of production, which resulted in the reduction of the labour force in the agricultural sector. In Kibtya some older informants (aged 60 and above) remembered that they had to hide from the PA authorities as they (the PA authorities) used to check each house at night-time to take youths for military service. When the current government took power in 1991, former military members were expelled so that most of them had no option but to return to their respective home communities and claim land to make their living through agriculture. Some of the returnees were handicapped during the fatal civil war, so they could no longer be productive. This situation coupled with scarcity of land created an additional economic and social burden in most parts of Ethiopia, including Kibtya.

Ethiopian agricultural policy and rural development plans since 1991

In 1995, the current Ethiopian government (FDRE) announced the long-term strategy called Agricultural Development Led Industrialization strategy (ADLI) (Pound and Jonfa, 2005). ADLI is aimed at achieving economic growth through simultaneous increments of agricultural and industrial output and by creating strong input–output linkage between the two sectors (Ohno, 2009:15). In order to address the challenge and reverse the limited performance of the agricultural sector, the Ethiopian government has been developing subsequent development and poverty reduction plans, namely the Sustainable Development and Poverty Reduction Program (SDPRP) (2002–2004), Plan for Accelerated and Sustained Development to End Poverty (PASDEP I) (2005–2009), and PASDEP II (2010–2014) (Ethiopian Agricultural Transformation Agency, 2010; Baker, 2012). These consecutive plans and development strategies were progressively designed to address challenges that had occurred in the past and to make improvements in a range of issues such as human resource development, conservation of natural resources, and the like (Ethiopian Agricultural Transformation Agency, 2010). For example, the synthesis report on accelerating Ethiopia’s agriculture described PASDEP-II as focused on ‘capacity building of smallholder farmers, with quality improvements in frontline extension; enhanced conservation of natural resources; improved frameworks for the private investors; and ensuring that productivity gains are sustainable and that inroads against food insecurity are made at the individual and national level’ (Ethiopian Agricultural Transformation Agency, 2010: 19).

The general framework and core of ADLI is summarized in Figure 4.1 to show how agricultural and industrial sectors are meant to be linked to achieve the intended industrialization according to the ADLI strategy. In this regard, one can see how the initial idea of ADLI has been evolving through formulation of SDPRP, PASDEP I and PASDEP II under the changing circumstances.

Figure 4.1: The ADLI strategy to achieve economic growth by linking agricultural and industrial sectors



Source: Ohno (2009)

As indicated, the initial objective of ADLI is to bring about rapid growth in the smallholder-dominated agricultural sector with the intention of ensuring national food security and achieving surplus production for the industrial market which leads to increasing rural households' income so that they will be able to buy industrial outputs such as chemical fertilizers, machinery and other consumption goods. This kind of mutually inclusive linkage would result in a win-win situation for both sectors in the initial stages and eventually lead to the intended industrial-led economic development (Ohno, 2009). Having seen these plans and implementation strategies under subsequent policy approaches, one can see how the Ethiopian government is committed to bringing about agricultural transformation in which industrialization would be the basis of future economic growth.

The challenge of adaptation with the government's development plans in Kibtya

In Kibtya, farmers are attempting to adapt their production system to the contemporary seasonal change while fitting into the government's development plans. This is a very important point because there is a significant challenge in terms of interaction between farmers and DAs on how farmers will fit into development plans while dealing with the fragile environment. The challenge stems from clashes between the government's approach to supply new seeds (mostly a single type of seed at a time) and fertilizers at particular times

of the year and farmers' flexible timetable to plant different seeds which fit into the ever-changing farming calendar each year. This section illustrates the complex feature of the farming system in Kibtya under *meher* and *belg* agricultural seasons (see detail in Chapter 2), whereby implementation of agricultural extension is found to be challenging.

Similar to many cases of smallholder farmers in less favoured areas (LFAs) (Ruben, 2005), most Kibtya farmers are facing challenges with respect to adaptation with a certain farming season because distribution of rainfall fluctuates every year. Though a farmer can go for both *meher* and *belg* seasons at the same time, the decision may depend on the size and location of farmland to be assigned to one or both seasons as well as one's preference on how many seed diversities to grow. In this vein, I observed that most farmers are adopting a new strategy in which they tailor cultivation activities according to the existing precipitation rather than expecting the regular distribution of rainfall. By doing so, Kibtya farmers are making use of any opportunity of rainfall and plant appropriate crop diversities as necessary so that they develop farming skills to grow different seeds according to appropriate seasons. For example, one of my informants explained how he often carries out different levels of farming (locally known as *gemesa* and *ayema*³⁰) starting from March until April. Then he sows cereals and legumes in May and June. A woman informant explained that *agay-teff* (a type of cereal staple food which is common in Kibtya) can be sown at the end of April and a *mud-teff* (recently introduced) can also be sown at the end of June; other types of *teff* crop can be sown until mid-August whereas weeding activities for *teff* crops is often carried out from July until the end of August or early September. Likewise, another informant described how he ploughs in March and repeats in April; at the end of April, he starts seeding if it rains. If it rains in May, he sows a type of barley called *ginbote-barley*. He prefers to seed *ginbote-barley*, particularly if he cannot manage to plough his land twice because this type of barley can survive in a less fertile soil compared to other types of barleys. Most farmers agree that in the sunny days of June, they often seed legumes (locally known as *diballa*) because beans and peas need to be seeded in the dry season.

³⁰ Farmers often plough their lands at least two times before sowing. The first round is called '*gemesa*' and the second round is known as '*ayema*'. Repetitive ploughing is to pull out/reduce the effect of weeds and smooth the soil to absorb water and to circulate air underneath the upper surface.

This implies there are different types of seeds and particular farming techniques for each type of harvesting season so that farmers keep diverse seeds which can be used in both seasons (*meher* and *belg* seasons) as appropriate. One adaptation strategy for farmers is thus maintenance of seed diversities. For example, if there is little or no *belg* rain, farmers will keep appropriate seeds such as *agay-teff*, *ginbote-barley* and *belgie-teff* for the next *belg* season next year. Meanwhile, farmers will get ready for the *meher* season in which they may sow different types of crops such as diverse barley seeds (*sene-barley*, *nechita-barley*, *re-barley*), different *teff* seeds (*seyete teff*, *nech teff*, *bursa-teff*), beans seeds (*yewuha-bakela*, *yeferenj-bakela*, *enat-bakela*), peas, lentil, and the like. One informant described how different diversities of crops with varied characteristics fit into different seasons throughout the year. For example, farmers often sow *re-barley* in April, whereas they sow *ginbote-barle* in May, *sene-barley* in June, *agay-teff* in April/May, *nech-teff*, *bursa-teff*, *seyete-teff* and *sengola-teff* in July–early days of August.

This kind of production – adaptation system with micro environments – also applies in the wider context. For example, the Zarma tribe in Mali divide the year into four seasons and tailor their agricultural activities according to the very nature of a particular season (Palmeri, 1979). Palmeri further explains that:

The first season, *Ghiou wate* (January to March) is the cold season in which farmers are mainly engaged in clearing fields by burning; followed by *haini wate* (April to June), which is the warm season in which farmers often carry out sowing and planting activities; In the third season, *kaidia wate* (July to September), farmers are mainly engaged in cultivation of Millet and finally the fourth season, *hemaro wate* (October to December) is the harvesting season; where farmers begins harvesting related activities. (1979: 53–54)

Further, West African farmers have continuously engaged with adapting their farming systems over the last 20 years to deal with new problems such as soil fertility decline, declining rainfall and weed emergence (Vissoh et al., 2004: 316–317; Röling et al., 2004: 216).

Table 4.2 summarizes structural features of smallholder farming in LFAs (Ruben, 2005), focusing on Kibtya’s local farming in comparison with other places under smallholder agriculture.

Table 4.2: Structural feature and production system of smallholder agriculture in less favoured areas (LFAs)

Ruben's structural features in LFAs	Similarity of Kibtya's production system to Ruben's criteria	Situation in Kibtya
Relatively 'simple' production technologies making intensive use of locally available production factors	Highly diversified – combination of different cropping; supported by animal husbandry; involves non-farm activities such as income diversification through small trading and sale of labour	Kibtya's production technologies are said to be entirely traditional with ox-plough, labour intensive and local seed systems
Strong local interactions between farm households based on exchange of inputs, labour and consumptive commodities		Interaction amongst households, between neighbours and the larger community is the basis of sharing resources, ideas and experiences in the context of Kibtya
Limited savings mainly for (consumption smoothing) and low fixed investments due to high risk and binding cash or credit constraints		Cash savings are very limited and credit facilities are not effectively established (particularly at the individual level) so that investing in fixed assets is limited
Large price bands between farm-gate and market prices and entry barriers caused by high transaction costs that reduce the tradability of agricultural commodities		Production of tradable crops is constrained by limited land holding and high transaction costs so that only some crops, such as lentils, fenugreek and other oil seeds are grown just for local markets to augment subsistence family life.

Source: Adapted from Ruben (2005: 83).

As indicated in the table, one of the features of agricultural production in smallholder farming is low and local-based technologies with a highly interactive communication system in order to ensure the smooth operation of exchanges in labour, inputs and other resources necessary for rural community livelihood. This implies that crucial is the social aspect of smallholder farming, which is often neglected in development planning, in which sharing of ideas, information, resources (borrowing, renting and exchanging) and sustenance of productivity is determined. For example, in Kibtya, as similarly observed in the north and central highlands of Ethiopia (Beshah, 2003), many types of resource including farmlands and grazing fields are used as common resources once the harvesting is completed. Smallholder farmers share or rent other resources such as fodder, seeds, animals and the like whenever necessary. This implies that, although smallholder farmers may lack cash savings, their economic basis is

associated with local resources such as land, animals and agricultural production, whereby they gain access to these resources through sharing, borrowing or renting through their social networks and local institutions. This sub-sector (smallholder agriculture) therefore has been supporting a large portion of the population, particularly in developing countries for many decades in the past (Peacock et al., 2004; Kisamba-Mugerwa, 2005).

From the aforementioned analysis of farming practices and seed diversities in relation to adaptation with different seasons, one can see that smallholder agriculture is characterized by myriad farming systems under different agro-ecological environments, in which ‘agricultural production is characterized by heterogeneity, seasonality, and spatial dispersion, and by large variations in weather’ (Binswanger and Deininger, 1997: 1963). While smallholder agriculture is constrained by a range of agro-ecological, economic and institutional factors, it has been helping to sustain national economies under fragile environments and scattered farmland in many parts of the world, and has been particularly significant in Sub-Saharan Africa and South East Asia (Hazell and Diao, 2005; Ruben, 2005). In this kind of context, most types of agricultural seeds are grown for consumption and other socio-cultural and spiritual needs. Hence, livelihood strategies of smallholder farmers are often sustained by many practices, including tillage, animal husbandry, crop diversification and rotation, fertilization, irrigation, drainage (Netting, 1993) and other non-farming activities such as small trading (Beshah, 2003; Ruben, 2005), rather than a cash economy per se. This implies government policy approaches should consider various forms of socio-cultural and environmental issues in the course of development planning. A uniform supply of input and technology, for example, would not be appropriate under such a complex set of contexts, because these have been affecting farmers’ decisions in terms of their needs in a particular situation. The following section briefly shows the broader ideas of external intervention and draws on a number of empirical accounts to reveal how government interventions impact on traditional smallholder agriculture in Kibtya.

Government intervention and its overall impact on Kibtya’s smallholder agriculture

Hayami and Ruttan (1971) state that in order to achieve agricultural and economic development, particularly in a situation where there is the constraint of flexible supply of land, less capacity of people, poor resources and ‘backward’ technology, external intervention through introduction of various packages (such as expertise, capital, advanced

biotechnology, new modes of production and organization) is necessary. However, the concept of intervention, as it stems from the perspectives of the western world, is found to be problematic in terms of its inherited intention in which ‘development’ ideas are imposed according to foreign (particularly western) economic standardization (Escobar, 2011). Hence, understanding the very local nature of a certain context would help to plan appropriate intervention programmes in which outside actors may be involved in an ongoing socially constructed and negotiated process, rather than the execution of a specified plan of action with expected outcomes, because intervention practices are shaped by the interaction of different actors and participants, and not ‘simply by the intervention model’ (Long, 1990: 16).

Formal agricultural extension in Ethiopia was first introduced in 1953 under the imperial regime (Beshah, 2003). The programme was initiated in educational institutions such as the then Imperial Ethiopian College of Agriculture and Mechanical Arts, now Alemaya University (Beshah, 2003). Beshah further explained that since 1930, subsequent Ethiopian governments launched a range of packages and projects with different approaches in the evolving process of developing an agricultural extension programme through religious and academic institutions and development units. Since its initiation, the extension programme in the country was focused mainly on introducing new technologies such as improved seeds, fertilizers and other agrochemicals, through which ‘the pace of the extension service since 1994 has shown a great leap in the provision of these inputs to farmers’ (2003: 42).

In the contemporary context of Kibtya, local government works closely with farmers through DAs, health and sanitary personnel, and other technical staff. DAs are often involved in the process of improving seed productivity, soil and water conservation and modern methods of animal breeding. For this reason, DAs are very close to farming situations as they are living in the heart of the Kibtya community. DAs’ houses are situated in a sub-village known as *Abichu-got* which is located in the centre of Kibtya. Depending on the nature/type of extension work, DAs can reach into each and every village and interact with farmers for various reasons such as group work, training, orientation on different packages and the like. The following section describes the government extension programme (Gebreselassie, 2006) and relationships between DAs and farmers in relation to the introduced technologies, including High Yielding Varieties (HYVs), fertilizers and other forms of agrochemicals.

The complex relationship between DAs and farmers and its impact on agricultural productivity

The relationship between DAs and farmers in Kibtya is not simple and straightforward; rather, it is complicated due to differentiated ideas, varied experiences and a different world outlook in general. On the positive side of DA–farmer relations, farmers are benefiting from DAs by learning about new experiences related to modern technologies such as Broad Bed Marker (BBM), irrigation techniques, application of chemical fertilizers, and use of HYVs, so that they are encouraged to pay more attention to the process of productivity compared to previous understandings. Most informants told me that having such kinds of new experiences helped them to make use of appropriate technologies relevant to the contemporary farming context. Some farmers described that the introduction of new technology helped them to give value to local seeds because they observed how Farmers’ Seeds (FS) are resistant to disease and environmental stress compared to new seeds. Kibtya farmers have different views and responses in regard to their relationships with DAs, but DAs in general are seen as young and inexperienced ‘experts’ (Ethiopian Agricultural Transformation Agency, 2010) who are trying to enforce what they learn in classrooms into farmers’ fields, where practical actions are different (in many ways) from theory-based learning. There are many instances that reveal how communication between DAs and farmers are characterized by tension, though it does not explicitly come to public attention. For example, DAs often advise (sometimes putting pressure on) farmers to plant certain types of seed or take action based on some scientific reasoning. In this case, farmers tend to refuse to implement what DAs are advising because some farmers are concerned about the knowledge of DAs. From the perspectives of DAs, most of them agreed that farmers are more knowledgeable than DAs in some instances; for instance, DAs recognized that farmers’ knowledge in relation to weather conditions is better than DAs’. Based on empirical data from Kibtya, I argue that farmers are also knowledgeable on a range of farming practices, such as management of seeds, mixed cropping, identification of relevant soils and the appropriate season for a particular harvest (see detail in Chapter 5).

The trend of communication in Kibtya depends on the level of one’s relationships with DAs and attitudes towards the intervention approach. For example, those farmers who are classified by DAs as the best farmers (known as model farmers) seem sympathetic to the government intervention approach so that most of them explained that DAs are useful in terms of teaching about new techniques such as how to seed in line, use fertilizers, improved

seeds and new technologies. I observed that DAs and government authorities mostly provide special assistance for model farmers such as training opportunities, priority in fertilizer delivery, improved seeds and new technologies. On the other hand, some farmers argue that the introduction of new technologies does not mean they are always effective. For example, one farmer explained that DAs often advocate the goodness of new varieties of wheat, not only in terms of productivity but also in resisting frost and disease. However, the wheat variety which was supplied in 2011 (when I was in Kibtya for my fieldwork) was threatened by yellow fungus (*bicha-wag*); therefore, farmers were disappointed and tended to regret sowing HYVs of wheat, because they saw from neighbouring farms that FSs (particularly black wheat) was not affected by the aforementioned disease. Most informants told me that HYVs cannot resist disease as they have been increasingly threatened by yellow fungus. One farmer said that ‘we found the new seed which government provided for the year 2011 is threatened by a disease called yellow-fungus. We suspect that the problem is not here with our soil or the weather, but the seed was originally contaminated by the disease’. Likewise, another farmer added that he believes that HYVs (particularly those delivered in 2011) are contaminated by yellow fungi because the disease is mainly attacking new varieties, not traditional ones. Even amongst the new varieties, some kinds of HYVs are more vulnerable than others. For example ‘*malefia-wheat*’ is highly threatened compared to ‘*degolo-wheat*’. Another farmer explained that:

we didn’t have experience on this type of disease. It has been appearing only since the last three or four years. Traditionally, we used to predict that if May rains, the disease called ‘wag’ would appear and may threaten our crops. However, the intensity of the threat is not as severe as the new disease ... the contemporary disease turns crops into yellowish colour and produces a dusty yellow particle on leaf of wheat crops.

I talked to some DAs about this and they admitted that the new wheat seed (known as HR 1685) was threatened by yellow fungus. DAs are trying to justify the situation by explaining that the government provided chemicals for farmers to spray on their farms in which HR 1685 were seeded. I observed that although the sprayed chemical mitigates the damage caused by yellow fungus, most farmers could not afford to buy the chemicals as they are too expensive for them.

Figure 4.2 shows how the yellow fungus threatens the introduced wheat, whereas farmers' wheat (black wheat) is not threatened by the same disease though both seeds are grown in the nearby farmlands.



Figure 4.2: Views on introduced (lower right and left) and indigenous (upper right and left) wheat which compares the effect of a disease (yellow fungus) between the two

Government supplies different versions of introduced seeds to ensure better productivity through a continuous development of improved variety each year. One DA explained that ‘every latest variety would have a better productivity than its predecessor’.³¹ Other DAs further explained that the productivity of the first generation (F1)³² is decreasing as it is sown

³¹ In my focus group discussion with DAs, they argue that new varieties should be provided each year as the already used variety may lose its quality of productivity due to the natural process of pollination.

³² F1 is a type of HYV, which is planted for the first time since being introduced from research institutes.

for many seasons, so the government has been supplying (and farmers need to buy) different HYVs every year in order to maintain optimum productivity. Alemu et al. (2010) reported that though the types of improved seeds such as Open Pollinated Varieties (OPVs)³³ are supposed to be saved by farmers for several seasons, productivity is characterized by a descending pattern. Even in the case of wheat, farmers need to buy HYVs and associated external inputs every year and yet the financial capacity of most farmers does not allow them to pursue this type of farming strategy.

Most Kibtya farmers do not see a major difference between subsequent³⁴ versions of HYVs in terms of either productivity or disease resistance; rather, the vulnerability of new seeds to disease and environmental stress has been increasing as these seeds are new and not yet adapted to the local environment. One farmer argues that though he knows six types of new wheat varieties, he has been sowing only one new type of wheat called *degolo*. He said that he does not see the difference in terms of resisting disease. Other farmers also told me that they sow only one or two types of new seed varieties at a time until they get the best quality in terms of productivity. These examples imply farmers' interest in retaining only some types of seeds with which they are familiar rather than engaging with different types of seeds every year. This situation also reveals how farmers are interested in security and stability of their production rather than maximizing yield per se. Cited in Abera, Carter (1989) explained that 'it has been observed that more successful development interventions have been those which concentrate on improvements to existing (traditional) practices rather than introducing new technologies to farmers who have no experience with them' (2004: 228).

On the other hand, model farmers (who are mostly members of the ruling party) support HYVs, including the pattern of supply from government. I gathered the same kind of intention (supporting the idea of HYVs and other forms of external inputs) from many model farmers and party members. This seems to be because they are key individuals who link government development strategy to the farming community. However, this does not mean to say that all model farmers are in favour of the government strategy. For example, one model farmer explained his view on the disadvantages of HYVs:

³³ The two key types of improved seeds are hybrid seeds and Open Pollinated Varieties (OPVs)/self-pollinated seeds (Alemu et al., 2010).

³⁴ Government provides different versions of wheat in a yearly basis

On the one hand, the nature of new seed which government provided every year is different from what we seeded in the previous year. Hence, we cannot learn about its special features in order to adapt and localize it as part of our seed system. On the other hand, the new seed varieties are more vulnerable to disease compared to the traditional ones. As a result, we become dependent on the outside source not only on seeds, but also on other external inputs as HYVs are not compatible without chemical fertilizers, pesticides and other forms of agrochemicals.

Another model farmer said that his preference between HYVs and FSs could vary depending on the situation. He explained that HYVs are productive if they are sown with fertilizers and if the weather and other situations are favourable (no disease, no frost, no pest and the like). However, his preference in poor weather conditions and in absence of external input would be FSs. Under these circumstances, Kibtya farmers are becoming increasingly suspicious about the government's approach so that new ideas and practices are not welcomed, at least during the first stage of introduction. Yet, the government continues to promote HYVs and associated new technologies whereby agricultural bureaus are trying to develop a more reliable strategy of seed supply at national level.

In the context of Kibtya, external supply is not limited to seeds but the government is providing other resources in the form of cash, material and aid. Most soil and water conservation activities and some other forms of development works (such as road maintenance, dam cleaning) are implemented through the government safety-net programme in which participating farmers are getting paid. The following case shows how farmers are losing interest in dealing with their own problems if the process of problem solving is not associated with incentives in the form of aid. The case also shows how the power of local institutions is shifted, whereby outside agents such as DAs are taking control over some of the issues within Kibtya community.

In the third week of February 2011, I noticed that most vegetable fields were drying so I asked one of my female informants why those vegetable were drying. She explained that the source of watering vegetable fields was irrigation from the Tulite River. She complained that the river dam cannot hold sufficient water because of accumulation of mud and silt inside the dam. The dam should have been cleaned by early September so it could have been refilled by a substantial amount of water before the rain stops.³⁵ However, the government body (who is

³⁵ The main rainy season is July–September.

responsible for cleaning up dams) started cleaning the dam only by late October, and the process of cleaning took about a month. As a result, the dam could be refilled as there was no rain by the time the cleaning was done. She also added that farmers had hoped to get rain by January, but as that did not happen, the Tulite River ended up with reduced water flow.

Following conversations with many informants and agricultural experts, I found that there was a possibility for farmers to clean up the dam themselves as they are the ones who are supposed to clean it anyway. Farmers were expecting some form of payment or aid from government for cleaning up the dam, as this was how the dam gets cleaned. Despite farmers knowing the dam would not get sufficient water if not cleaned up, they chose to wait for guidance and possible aid (financial or material) from government for their own benefit. As a result, most farmers who grow vegetables in their respective farms lost their income (from sale of vegetables) which was a substantial hit in the fiscal year's subsistence economy. This case (among many other cases) demonstrated the power shift from traditional institutions to outside agents, in which group-based local practices and knowledge systems are evolving in relation to broader changes including the shifting role of various state institutions and agents (such as DAs) and government policy at national level.

Another intervention approach which is not welcomed by farmers is cluster farming. Cluster farming/seeding is designed (by DAs) to seed the same types of seed varieties on the clustered farm sites, making it easier for DAs to follow up. In this case, all farmers whose farms falls within the same cluster, must seed the same type of crops and no single farmer is allowed to seed another type of crop different from those within the cluster. Farmers are concerned about cluster farming because they cannot be flexible according to the nature of soil, type of seed and weather conditions. Smallholder farmers need seed diversity for various purposes which go beyond consumption. For example, some kinds of seeds may be needed for social, cultural and spiritual purposes, and other types of crops may be grown for income generation and the like. Hence, flexibility is important for smallholder farmers as their agricultural practices are dependent on a range of experiences and according to certain situations. For example, some farmers argue that if it rains in May, a crop disease known as 'white fungus' would threaten wheat crops, so they never seed wheat crops when rain falls in May. In 2011, rain fell in May, so farmers knew that they should not seed wheat or else their wheat would be threatened by white fungus or *wag*. In this situation, farmers traditionally

prefer to plant *teff* or legume as part of their crop rotation system. However, DAs put pressure on all farmers in the cluster to seed wheat and the result was devastating in terms of productivity. In this regard, one can see the potential damage and devastation of the whole crop in a cluster if a disease or natural catastrophe occurs as happened in 2011.

In Kibtya, all introduced wheat crops in a cluster were threatened in 2011 by the disease and most farmers ended up with little or no production. One of my informants (a teacher) explained that he remembered one farmer's land provided 20 quintals of barley in 2010, but in the following year, the production from the same area of land was only 5 quintals of wheat. He argues that the cluster farming approach is the main contributor to such production failure, because if farmers were not forced to seed only one type of crop, they would have seeded different crops so that some crops would have been saved.³⁶ DAs admitted that the yellow fungus threatened introduced wheat varieties in particular. The problem from the DAs' perspectives is that if they allow some farmers to seed their preferred crops within the cluster farmlands, then the whole idea of cluster farming would fail as all farmers in the cluster may claim the same right to seed their own preferences. Hence, farmers seem to have no other option than to follow DAs' instructions despite their alternative preference. This situation makes communication between farmers and DAs more challenging, particularly in a situation where the advice of DAs results in unintended consequences.

One farmer told me that in 2010, he sowed wheat in one of his pieces of farmland, so he seeded fenugreek/*abish* in 2011 as part of practising crop rotation. DAs advised him to get rid of his fenugreek/*abish* because the other farmers within the cluster were sowing wheat crops. The farmer refused to do that because he knew that sowing wheat for two consecutive years would not be productive. Eventually, the farmer replaced his fenugreek/*abish* by wheat as instructed by the DAs. The result was very disappointing as the farmer's wheat farm ended up with very little production. I checked this with many informants, including farmers, students and teachers in the area and they all confirmed that the mentioned farmer was instructed by DAs to replace his fenugreek/*abish* crop by wheat just to fit into the cluster farming. I discussed with many farmers regarding their opinion of cluster farming and most were not happy about it because cluster farming prevents farmers' traditional practices of crop rotation in which they renew soil nutrients to maintain productivity as well as maintain

³⁶ For example, the disease does not affect the indigenous black wheat.

seed diversity. A further challenge in the course of complex interaction between DAs and farmers in Kibtya is related to government's promotion of chemical fertilizers. As explained in the following section, I observed that Kibtya farmers tend to avoid or at least minimize use of fertilizer as they revealed their opinion in the form of silent resistance.

The challenge of promotion of fertilizer and its impact in Kibtya

In the course of promotion of chemical fertilizer, DAs in Kibtya area are undertaking yearly registration activities in which they identify which farmer wants what amount of fertilizer, so they often prepare a short list of farmers who signed up to buy fertilizer. Afterwards, DAs send the list as a feedback for purchase of fertilizer at regional and national level. The implication is that once fertilizer is bought and transported to local areas, the registered farmer is liable to pay his debt commensurate to the amount of fertilizer he/she signed up for during the registration. As explained in the words of one farmer, most farmers are no longer interested in taking fertilizer because the farming activities are almost half way through when the fertilizer arrives. One of my informants explained that:

in the first hand, most of us are not sure whether we should exclusively replace our local seeds by modern seeds where these new seeds are effective only if we use fertilizer. I am personally concerned that fertilizer burns the soil if there is insufficient rainfall. As I told you, the amount of rainfall is not reliable in our area. Even those who are interested to use fertilizer, they are not getting the timely delivery so that they start farming before the precious rainfall goes ... so how does taking fertilizer make sense if it is not being used ... another challenge of using fertilizer is that it is not sometimes profitable because agricultural production cannot satisfy our consumption needs after deduction of debt for fertilizer.

The second challenge is related to price fluctuation of fertilizer due to the high rate of inflation. This situation has been frustrating farmers as they cannot afford to pay their debt which is often higher than agreed during registration. As a result, farmers (particularly poor farmers) decline to take their share of fertilizer. This situation in turn has been frustrating for DAs as they complain that farmers are breaching the agreement which they were signed up for.

DAs often complain that they cannot be certain about farmers' intentions as they (farmers) often change their minds and breach agreements. One of the DAs explained his viewpoint:

You can't rely on any kind of agreement you may reach with farmers ... our relationship with farmers is characterized by lots of interactions, discussions and verbal agreements. However, you find most agreements are breached by farmers. For example, last year (2010) we organized a big meeting in Kibtya and discussed about benefits of fertilizer. Some model farmers were also witness as to how they got increased production from use of fertilizer and improved seeds. Then almost all participant farmers in a meeting agreed to use fertilizer in this year (2011); and this was confirmed by signature of each farmer. However, after government purchased the proposed fertilizer and transported it to Kibtya, most farmers changed their mind when we ask them to take their share and pay their debts accordingly ... they come up with many reasons, including 'price is higher than the one they agreed upon', 'fertilizer is not suitable to their particular soil type', 'there is insufficient rainfall ...'. Farmers also complain as if there was a systematic influence when they sign the agreement, etc.

I observed that DAs organized a couple of meetings with farmers to try to solve the problem but without success, so the DAs forced farmers to take fertilizer commensurate to what they had signed for. Local authorities in Mekdella wereda argue that farmers must take the provided fertilizer and they are liable to pay the debt, because fertilizer was purchased according to the 'respective demand of farmers' which is confirmed by the signature of each farmer during registration. As a result, farmers are forced to take fertilizers but, in practice, I have seen some unused sachets of fertilizer in a couple of farmers' houses because those farmers are not interested in applying fertilizer on their land for many reasons including late delivery, decision not to use fertilizer, and low rainfall; so they keep the fertilizer either for sale or for laminating/painting purposes for their houses. This situation also influences farmers' ability to maintain regular productivity, because on the one hand, those farmers who need to use fertilizer do not often get a timely delivery; on the other hand, all types of soil cannot respond the same way to chemical fertilizers; if fertilizer is not used on an appropriate soil type, at the recommended time and in the recommended amounts, it will not deliver the intended productivity (Gete et al., 2010). Kibtya farmers are not explicit about sensitive issues and for this reason they did not tell me what exactly happened during the registration for buying chemical fertilizers. It seems that outside influence as well as possible domination from within (by a group of people) may have broken the internal cohesion and restricted their ability to express their misgivings in an explicit manner. Model farmers or party members may have played a significant role in terms of dividing farmers' opinions and opposition against new ideas and intervention. According to the general trend of responses of my informants, and cross-checking with different actors such as teachers and students, it seems farmers were subjected to a great deal of pressure in meetings and in the 1-5 community

structuring system.³⁷ However, this does not mean farmers' decisions to buy chemical fertilizers were made genuinely; rather, it was a form of avoiding pressure from DAs in the knowledge that the decision they made would not be implemented. This is revealed through resistance by farmers at the individual level when they refused to take fertilizers when DAs were trying to collect payments.

Similar tension and challenge is observed in other areas too. For example, in an effort to build small-scale irrigation dams in Mekele plateau in Northern Ethiopia, a team of experts faced strong reactions from farmers' representatives 'with anger and frustration about lack of consultation at all phases of project implementation' (Abera, 2004: 233). This kind of tension is often created due to lack of understanding of the power of individuals and social actors and the dynamics of community decision making through institutional relations. Long explained the capacity of individual and social actors (through interaction with groups of people) in processing social experience to solve problems through continuous interaction with their own actions and observation of others even under difficult forms of coercion (1990: 8–10).

Coming back to Kibtya, farmers appealed to the Member of Parliament (MP), expressing the problem of signing a contract to buy chemical fertilizers. Most farmers complained that they signed the contract because of systematic influence by some local groups and DAs. Kibtya farmers further argue that their voice often gets suppressed by dominant groups so that most people do not express their contending opinions, particularly if the meeting is called by government at local level, because they fear reprisals from local authorities. The only power that farmers have is denial of implementation through tacit forms of resistance. Scott reported detailed accounts of his empirical investigation in the Malaysian village, 'Sedaka',³⁸ in which he explained the everyday resistance of village residents opposing the introduction of combined harvesting which affects the traditional double cropping. He further explains, this kind of silent resistance often 'requires little or no coordination or planning; they make use of implicit understandings and informal networks; they often represent a form of individual self-help; they typically avoid any direct, symbolic confrontation with authority' (1985: xvi). This

³⁷ Government structures rural communities in the form of 1-5 arrangement, which means one person (usually a member of the ruling party) is responsible for four individuals. Despite a great deal of critique, the 1-5 arrangement is justified by government as a useful tool to facilitate communication.

³⁸ Sedaka is not the real name of the village according to Scott (1985: xvii).

shows that the process of decision making, particularly in public meetings, is quite complicated, because it needs to be reviewed from a range of perspectives according to the specific context. Long (1990) states that decision making entails a complex set of social, cultural and political considerations in which the role of individual and group actors (under the specific socio-cultural background) may influence the direction of decisions to be taken, because their existence is interwoven with other persons as well as institutional frameworks.

In sum, the effort of DAs to introduce fertilizer and other technologies such as HYVs encounters a number of challenges when it comes to implementation of planned interventions. The major problem that DAs are facing is insufficient understanding of the socio-cultural aspect of community livelihood, which determines how decisions are made and shared across the community. The following events reveal community decision making is not a simple process that can be made in meetings; rather, one needs to understand various aspects of farming livelihood in the course of applying any kind of extension programme.

In 2011, the Ethiopian government announced ‘60 days free labour campaign’ on soil and water conservation activities, in which every farmer from each family had to participate irrespective of gender and age. However, farmers were concerned as other activities were left undone in which case their harvest might be vulnerable to different natural and manmade threats. Local authorities advocated that farmers discuss the importance of the campaign before it was launched. In practice, farmers were not happy with this campaign because it forced all family members to be involved in it, leaving other activities undone. Most farmers complained that women should not have to take part in the campaign as they held double responsibilities (both household and field activities), some complained that their wives were pregnant, some said elders could not afford to participate, etc. Furthermore, most farmers complained that while all family members participated in the campaign, animals had to remain home without food. As a result, some farmers left their animals in fields unattended while others kept their animals at home. Those animals that were left unattended often made their way into protected areas and damaged planted trees and bushes. When animals were captured within protected areas, DAs (in cooperation with local administrators) confined those animals and charged owners for failing to keep animals out of the protected areas. However, farmers argued that they had no alternative but to leave their animals unattended in a situation where nobody was at home to rear animals.

The aforementioned issues and many other related circumstances are seemingly widening the gap in the relationship between DAs and farmers. Frequently DAs do not fully understand the complex meaning of everyday activities in the course of making agricultural life in the case of Kibtya. For example, farmers are often concerned whether their harvesting activities are undertaken on time, so they prioritize their own routine activities rather than involving themselves in other activities designed by government or other actors because they need to complete certain tasks before a particular season (such as *belg* season or *meher* season) is passed. In order to do this, they usually help each other through sharing tasks amongst their family members as well as their traditional institutions at the community level. In the case of farming life, the entire household, irrespective of gender and age (except infants and very old persons), are assigned to different activities. Some may go to help neighbours/community members while the rest of the family share jobs (rearing animals, plough, cutting, threshing, etc.). To conclude, one can see that under this kind of livelihood, involving all family members in only one activity, such as in a 60 days campaign, would not be acceptable to farmers as it would impact the regular farming activities with the potential side-effect on productivity.

However, the trend of substituting traditional farming practices by modern technology often results in erosion of social and environmental capital (Wilson, 2012), so there is an urgent need to seek alternative ways of achieving rural development and community resilience through identification of local priorities, input complementarities and understanding of natural and social environments, as these are the key factors for application of appropriate intervention (Beshah, 2003; Ethiopian Agricultural Transformation Agency, 2010).

Conclusion

This chapter highlights the role of agriculture in economic growth from two different perspectives. The first one is achieving market-oriented surplus production through use of high input agriculture so that agricultural crops can be exported to the world market in order to gain considerable economic growth which leads towards industrialization (Johnston and Mellor, 1961; Hayami and Ruttan, 1971; Binswanger and Deininger, 1997; Wilson, 2012). Another perspective is developing an integrated approach in which smallholder farmers would use locally available materials and experiential knowledge to sustain staple food productivity and such a local agricultural system could be enhanced through cooperation with

the scientific and research-based approaches (Beshah, 2003; Ruben, 2005; Byerlee et al., 2009).

I argue that market-oriented productivity would not be realistic in the context of smallholder agriculture where in most cases, particularly in the African context, smallholder farmers are engaged with staple food production under fragmented farmlands in a range of agro-climatic zones. Growing staple food production cannot be underestimated in terms of its role for general economic growth because it saves foreign exchange through building capacity of domestic production and stopping importation of substitute food stuff and cereals which could have been the crucial challenge for African governments (Byerlee et al., 2009). Further, maintaining local specific farming practices would save vulnerable agricultural resources such as clean water sources and soil nutrients as well as protecting local seeds in the hands of millions of smallholder farmers rather than being monopolized by a few multinational seed companies. The implication is that smallholder farming would ensure a sustainable food supply and nutrition through diversity and distribution of risks across the world. In practice, the modern world's development approach is regulated according to how agricultural growth is relevant to developed economies in which new ideas and technologies would be induced, whereby the trend seems to be 'imposing the new post agricultural revolution strategy on Africa before its own agricultural revolution has happened' (Hazell and Diao, 2005: 25).

As revealed in the aforementioned empirical data, maintenance of diversified seeds in the case of fragmented farmlands sustains productivity and ensures stability of production rather than yield increment for marketing purposes. The level of smallholder engagement in the market is limited to their respective localities because their agro-ecological environments, land sizes and socio-economic contexts do not allow them to grow extensive cash crops. Instead, they are attempting to grow a range of seed diversities to fit the specific context within their respective micro environments that helps to sustain staple food productivity, which is still the major part of the economy. In order to maintain such kind of agricultural productivity, seed diversity plays a vital role as seeds have different germinating and maturity characteristics depending on distribution of rainfall and soil type.

Smallholder farmers make use of seed diversities to cope with the fluctuating weather conditions, in which they are engaged in a continuous process of adaptation and flexible

timetable. In the context of Kibtya, understanding the contemporary farming seasons is not simple, as there is no clear-cut or benchmark in terms of ploughing and seeding patterns. For example, *meher* and *belg* seasons sometimes overlap when rain falls in both seasons. In this case, choice of season for cultivation of a particular seed will be determined by the individual farmer based on his own context in relation to size and location of farmlands as well as priority seeds to be grown. Such systems are widespread in other African countries and in Latin America where each individual farmer understands the opportunities and constraints of the ecological and social environment in which he or she lives (McMillan and Harlow, 1991: 41). This implies the application of a uniform high input agriculture needs to be operationalized according to the nature of locally specified contexts, because in most cases of smallholder agriculture, farmlands are fragmented and heterogeneous with a range of agro-ecological environments, so that formulation of agricultural policies, development plans and application of technologies need careful consideration.

Based on evidence from Kibtya and wider perspectives, one can see that high input and market-oriented agriculture in smallholder farming is constrained by a range of factors, including agro-ecological, economic and institutional ones as well as high transaction costs, scarcity of land and climatic challenge. Hence, attention should be given to enhancing local technologies and production of farmers' seeds, because empirical data shows that low input agriculture has potential if appropriate assistance such as complementary technologies with technical advice, training, and access to credit is provided.

I argue that agricultural growth in smallholder agriculture can only be achieved if multiple aspects of agriculture such as the long-term experience and integrated practices of smallholder farmers are considered. Empirical examples from Kibtya indicate that implementation of agricultural policy is challenging, as interaction between Kibtya farmers and DAs is characterized by tension because of farmers' resistance to take up proposed technologies. Hence, coercive measures against the contextual reality may lead to tension between those proponents of a high-input/high-yield agricultural system (particularly DAs) and poor farmers who cannot afford to buy expensive inputs. I also argue that promotion of high input agriculture should be designed according to the situation of locally established socio-cultural and environmental systems because poor farmers in remote regions are entirely

reliant on locally integrated systems in which they maintain sustainable production rather than surplus production.

In sum, by drawing on experiences of smallholder farmers, particularly from Asia and Africa as well as examining detailed accounts of complex interaction between Kibtya farmers and DAs, I argue for the need to identify local priorities rather than a ‘one size-fits-all’ approach through external intervention because local specific socio-cultural and environmental contexts would affect the implementation of intervention, so that success in achieving agricultural productivity will be determined by the extent to which a particular intervention considers local priorities, input complementarities and an understanding of natural and social environments.

Chapter 5: Farmers' seed knowledge

Introduction

Following from the previous chapters on land and agriculture, this chapter discusses farmers' knowledge with the focus on seed knowledge, its acquisition and maintenance under the existing communication system in Kibtya community. This chapter highlights the broader perspectives of varied understandings and contested meanings of local or indigenous knowledge (IK) and scientific knowledge (Ellen et al., 2000; Yarrow, 2008), to show how this is locally understood in the context of the Kibtya community. The chapter considers these issues in relation to broader debates about the nature of knowledge, the debates on understandings of knowledge and its various characteristics in terms of whether it is based on cognition (Geber, 1977; Bodner, 1986; Goldman, 1986) or personal experiences (Bloor, 1983; Skelton and Allen, 1999; Eraut, 2000).

In contrast to the psychological view, which argues that knowledge is perceived within the learner and his/her preparedness associated with the pre-existing mental structure (Geber, 1977; Bloor, 1983), I will go beyond such debates by drawing on a greater extent of ethnographic accounts of experiential knowledge in terms of how people acquire knowledge through interaction with the physical environment under a complex set of cultures. Hence, the chapter emphasizes farmers' experiential knowledge, building on the idea that knowledge is acquired through repetitive observation, practice and interaction with the natural environment (Ellen et al., 2000; Ingold, 2000), and is revealed in its personalized form and impressions in episodic memory (Suchman, 1987; Collins et al., 1992; Eraut, 2000). The idea of 'knowledge' is hidden in a lot of accounts of indigenous knowledge (IK) in which knowledge is understood as a coherent and bounded system. By contrast, I suggest that the ethnographic material relating to farming in Kibtya reveals how knowledge is practical and situated in the contemporary social activity and social relations. This leads to a contextual understanding of farmers' knowledge that stresses the ways in which this emerges not as an abstract system but as a series of thoughts and ideas caused by interactions with other people and environments. My argument is also informed by Ingold's assertion that the mental process of understanding things should be understood from peoples' interrelations with their environment and not purely from the perspective of body-mind separation (Ingold, 2000).

The first few sections of this chapter discuss the general debate on perception of knowledge from various perspectives, but particularly from psychological and experiential points of views. This is followed by highlighting the contested meanings of local knowledge in which various interpretations of the term are explained. Then the chapter goes on to describe farmers' knowledge, drawing on ethnographic accounts of how Kibtya farmers acquired local knowledge on seeds, agriculture and livelihood in general. Details of such accounts are also described under subsequent sections to show the process of knowing through everyday interactions of farmers with each other and with the natural environment. This is linked to the final section on communication between Kibtya farmers, their children and external institutions to show the impact on the existing local understanding in Kibtya. In the concluding section, the chapter summarizes the entire section and draws arguments based on the empirical accounts discussed.

Knowledge in perspective

Eraut (2000) analysed knowledge from psychological and experiential points of view and stated that there are different fields of interests in which knowledge is interpreted as codified knowledge (also referred to as public knowledge or propositional knowledge) on the one hand, and personal knowledge on the other (including procedural knowledge, process knowledge and experimental knowledge). Codified knowledge is subject to meet a certain epistemological status in order to be incorporated into education programmes and academic courses, so it is supposed to satisfy quality control by editors and peer review, and fulfil a number of conditions such as 'truth', 'belief', 'causation', 'justification', 'reliability' and so forth (Goldman, 1986; Eraut, 2000). Acquiring knowledge in this case is related to the extent that the formation of truth and 'belief-producing process is reliable ... helps qualify the belief for knowledge' (Goldman, 1986: 43). Similarly, some argue that acquiring knowledge needs subjective exploration in which reality is subjective and perceived within the learner so that knowing would be achieved in line with the preparedness of the learner to associate his/her experience with their pre-existing mental structure (Geber, 1977; Bloor, 1983; Bodner, 1986). However, and as Eraut explained, the notion of acquiring codified knowledge should not be overemphasized as though it is context free:

The process by which codified knowledge is acquired is affected by the learning context, so that subsequent use of that knowledge in a different context will require further

learning. Hence the personal, available for use, version of a public concept or idea will be determined by the personal history of its use. This may have been within a single context or across a range of contexts, and will have involved its integration with other knowledge, both personal and public. (2000: 114)

This idea reveals that understanding of knowledge as if it is free of experience and contexts would lead to a mistake because the study of people often focuses on how they ‘perceive, act, think, know, learn and remember within the settings of their mutual, practical involvement in the lived-in world’ (Ingold, 2000: 171). Bicker et al. state that, ‘It is a mistake to imagine that there is some reified version of “the knowledge”; It is likewise a mistake to imagine that this knowledge is “magic”, only existing in the ether, or that we cannot make better efforts to avoid some of the issues that emerge from current interpretations of indigenous knowledge’ (2004: 22).

An empiricist approach to knowledge promotes that it is acquired based on what we experience in the physical world in which we see, touch, feel and examine, so that objects are independent of the examiner (Suchman, 1987; Collins et al., 1992). Skelton and Allen argue on the situational nature of knowledge in which they argue that acquiring knowledge depends on specific situations, because knowledge itself is a cultural construction in which it can be perceived according to various contexts; ‘what one culture considers valuable, another may dismiss’ (1999: 59). Hence, one can say that personal knowledge is identified by the manner of its use according to diverse contexts and interaction with the natural environment. In sum, the discourse on the theory of knowledge is complex and scholars have debated it from psychological, personal, experiential, and social points of views. Extending such debates is beyond the scope of this chapter, so I will focus on local knowledge and the associated issues of its meaning and ways of knowing in the context of the Kibtya community.

Local knowledge and its contested meanings

Indigenous knowledge (IK) has been defined in many ways by a range of authors in terms of how they perceive the term from different perspectives (see Lewis, 1974; Inglis, 1993; Berkes et al., 2000; Ocholla, 2007; Yarrow, 2008). The concept of IK entails that the knowledge is isolated from history, whereby even the most remote of the smallholder groups who have been considered as non-indigenous are excluded (Dove, 2000). However, it is difficult to argue for the

existence of a completely isolated community in the contemporary globalized world. Yarrow (2008) and Ellen et al. (2000) argue that the problem with IK is its complex nature within social, ideological and political contexts, and it is often difficult to use the term in a morally neutral or apolitical way. Agrawal (1995) suggests collaborative work between indigenous and scientific knowledge so that the relevant approach would be adopted.

As Ellen et al. (2000) stated, other colloquial terms such as ‘traditional’, ‘local’ and ‘folk’ adds more confusion to the effort to understand IK. Most terms such as ‘indigenous’, ‘native’ and ‘aboriginal’ (Ellen et al., 2000) are not sufficient to describe multiple aspects of knowledge, as such terms tend to emphasize separation and segregation of knowledge only in a specific context. Ellen argues “‘Tribal’ seems to have political connotations; ‘folk’ and ‘traditional’ are less morally loaded. ‘Local’ sounds neutral although its use is becoming less and less for many reasons’ (2000: 3). This chapter examines accounts in which understanding of ‘local knowledge’ does not entail a rigid dichotomy in opposition to ‘modern knowledge’ because, in Kibtya, various ‘outside’ influences are incorporated within local practices and this has been the case for some time. In this regard, Bebbington explained that:

Distinctions abound between traditional and modern, agro-ecological and external input technologies, indigenous and Green Revolution agriculture, with normative distinctions paralleling the terminological: indigenous is good and Green Revolution bad, traditional technology is desirable and modern technology is to be distrusted ... is not necessarily viable. (1993: 274)

Having briefly discussed the complex meanings and interpretations of different terms, I tend not to use a specific term as a reference for a coherent entity. Focusing on farming practices in Kibtya, I show that knowledge always emerges in practice, so I recognize that this is always complex and in a sense always new. In other words, a given knowledge- or experience-based awareness of nature or culture is subject to various forms of contexts and change according to the contemporary situations. This implies that we apply ideas to specific new contexts (including the so-called local/traditional knowledge) and they are constantly changing in response to these. Antweiler regarded the importance of local knowledge while highlighting its responsive nature to change:

Local knowledge has the advantage of tending to be appropriate within the local culture and compatible with the local natural environment. This is linked to the fact that local knowledge is usually saturated with long experience, and therefore also takes into account longer-term trends of change in society and the environment. (1998: 483)

The following sections describe the livelihood of Kibtya community and their local knowledge associated with farming and seed-saving practices. As I will explain later, there are various forms of knowing in Kibtya, and these are the basis for acquiring knowledge through time. As indicated, detailed empirical accounts hereafter explain that the process of acquiring knowledge is not something to be measured in a quantifiable manner; rather, it is revealed through making a living. In other words, Kibtya farmers are living their knowledge which is embodied as a tacit, or sometimes it can be explicit, experience through pragmatic learning-by-doing (Bruner, 1966; Eraut, 2000; Nonaka and Toyama, 2003).

How do farmers acquire knowledge?

The issue of identifying how knowledge is acquired is not simplistic; as knowledge in Kibtya is not something to be discovered which implies it would reach in its end. Rather, it is acquired through a lifelong process of learning, so that people are always coming to know things in their daily life. One farmer (70) explained that ‘it is not difficult to acquire farming knowledge so long as you are living as a farmer and practising what farmers are doing’. This implies that farmers themselves stress the situated nature of knowledge which is acquired through practice. When it comes to a broader perspective, Aikenhead and Ogawa explain that ‘an Indigenous coming to know is a journey toward wisdom or a journey in wisdom-in-action, not a destination of discovering knowledge’ (2007: 553). This implies knowledge is acquired in the process of lifelong learning while making a living. This kind of learning and knowing of things is not pre-designed like modern education. It is, rather, dynamic, evolving and can be adapted in a range of scenarios and contexts. On the other hand, the idea of lifelong learning can be designed in modern societies, whereby national policies are framed to build a learning society through a pragmatic and integrated system. For example, some countries such as Finland, the UK and Australia consider the form of lifelong learning in their respective national policies. In Finland, lifelong learning is the main strategy to build a huge technological learning society in the longer term (Longworth, 2013: 32).

Knowledge in the context of rural areas seems to be a practical and continuous process with flexible space for generations to adopt different modes of learning according to their respective contexts (Aikenhead and Ogawa, 2007). In Kibtya, for example, some parents take their children to farms, grazing fields, water points, etc., and teach them about what is what. Others might take their children to farmlands just to make them observe things, as children are often enthusiastic to learn what their parents do. One informant farmer explained his experience of going to the farm (since the age of 10) with his father and observing what his father was doing. When he was 15 years old, the farmer was particularly keen to plough, so when his father paused ploughing (e.g. for seeding or taking a short break), he used to take over the plough (*erf*)³⁹ and start ploughing. Initially, his father used to stop him, but later the father realized that his son was grown enough to handle ploughing, so he taught him some practical lessons. The informant farmer also explained that he learned how to weed plants, cut and harvest in the same way as he had learned to plough. When it comes to weeding, the farmer explained that his mother was the one who taught him skills like how to identify between weed plants and crops. The important point here is that children learn different things from different people in the context of multiple roles and relationships they hold. Many other informants also told the same story in terms of how their children are engaged with various activities through gradual processes. For example, one informant explained that:

There are different levels of knowing things. My children often start getting involved in some activities as early as the age of 5. At this age, children may start moving things within the house. In this process, they could learn names, appearance and other features of household goods. As they grow, they would walk out of premises with their mothers to fetch water, to shepherd, to weed, to rear animals, to plough, to cut and harvest corresponding to their capacity at different age levels. Children's knowledge on social issues and wider context would be evolved as they join the society and interact with people in different contexts.

This shows that the process of learning is integrated into social practice at different levels while children are increasingly participating in various aspects of farming and socio-cultural practices.

Lave and Wenger assert that:

³⁹ A long wooden lever attached to the sharp metallic plough to control the making of the seed bed.

Learners inevitably participate in communities of practitioners and that the mastery of knowledge and skill requires newcomers to move toward full participation in the sociocultural practices ... A person's intentions to learn are engaged and the meaning of learning is configured through the process of becoming a full participant in a sociocultural practice. This social process includes, indeed it subsumes, the learning of knowledgeable skills. (1991: 28).

It is interesting that in such a context, learning is not a one-way process of diffusion from teacher to pupil. People would learn through their interactions and participation with lots of different people. In a situation where there is no formal educational institution, people would learn different things from their parents and different people, and learning takes place through the complex web of overlapping social roles and relationships. Goody explained that: 'many simple societies do not have institutionalized formal teaching or learning roles beyond the expert/novice distinction integral to cooperative activity between adults and children, and the modelling and control implicit in the relationship of parents to children' (1975: 10). In my participant observation, I realized that learning is something to be shared through a range of socio-cultural practices at various forms of household and field activities, whereby they would gradually acquire knowledge in how to make a rural way of life. Ingold also described 'if knowledge is shared, it is because people work together, through their joint immersion in the settings of activity, in the process of its formation' (2000: 163). Therefore, such a step-by-step learning process seems to be helping children to experience various aspects of life through the socially integrated and shared knowledge systems.

Aynadis Misaw (20) is a daughter of Ato Misaw Guale. She is pursuing her college education (nursing) in Dessie town. She remembers how she passed through different processes of observations and practices at different age levels. In her words:

Initially I did not know how to tie up the harvested crops. My parents did for me and I used to carry as per my capacity; later, I learned how to tie up *nedo*⁴⁰ and carry myself to move them to *awdima* (crop threshing site) ... further, when I was about 10, I used to observe while my parents were weeding. Then I used to try like what they did and it was like a fun for me. In the beginning, I usually made mistakes, such as removing crops

⁴⁰ Nedo is a bunch of harvested crops before threshing, which is fastened in a handful size. Farmers collect and tie a couple of *nedos* (according to respective capacities) to carry and move to *awdima*.

instead of weeds. My parents, particularly my mother, gradually guided me to be aware of names and characteristics of different crops and weeds. After some time with practice, I managed to work independently.

Another student, Meka Damtew (12) remembers a similar situation when she was first trying to identify the right species of grass to make baskets:

My older sister (Zeineba Damtew) took me to the field and showed me how to identify and collect the right grass species. Initially I used to collect the false species because it is quite similar with the true one. When I collect the false species, my mother, sister, and peers used to laugh at me and taught me again and again how to identify the right type. Later, I managed to identify the right species

Aynadis Misaw remembers from her childhood that she used to help her mother in taking household goods from place to place. She explains that since her childhood, she learned about the names of goods; household tools such as different types of basket, container of crop (*gota*); making *midija* (fireplace); *medeb* (sitting and sleeping places); cleaning a house and laminating a floor using cow dung; cooking food (with spices); storing seeds and so forth; so she argued that learning is a gradual process. She also remembered her early days of farming experiences. When she was about 10–12, she started weeding legume plants (particularly beans) because identifying weed plants in a bean farm is not difficult as seedlings of bean are easily identifiable. When it comes to *teff* crop, Aynadis Misaw said that there is a weed plant locally known as *asendabo*; it looks just like *teff*, so it was very difficult for her to identify the right crop from weed. She initially used to weed crops rather than weeds. This happened many times and her parents were keen to help her to identify weeds from crops. Through time, she learned how to weed and identify the right seed of any crop diversities.

Another aspect of learning is gender-based learning. For example, boys could start ploughing at the age of 15 depending on the specific context of a particular household. One farmer told me that he started most farming activities (sometimes including ploughing – in smooth soil types) at the age of 12. Akin to Aynadis's explanation, another farmer also explained that his parents used to take him to farms where weeding was taking place. He used to observe when his parents uprooted weeds so that gradually he became familiar with the appearance of most of the crops

and their associated weeds. As his parents weeded ahead of him, they used to intentionally pass over some weeds in order to check whether their son was able to identify them.

Through observing these practices, I realized that some activities are more attractive than others. Children tend to engage in attractive activities more frequently, so they would eventually get detailed experience and knowledge as they grew older. For example, Aynadis Misaw said that weeding is her favourite activity because, in weeding, neighbours and others gather to help each other. Anyone who has a small child or children would bring them to weeding because there is often nobody at home to take care of them. Then, children would have lots of fun playing with their peers from neighbours, whereby they could learn from one another. I asked Aynadis Misaw whether she prefers to stay in weeding farms rather than playing with her friends somewhere else. She said that there is no particular place for children to play. Parents often want to keep an eye on their small children, so they take them either to places they are working or keep them at home. Hence weeding and other working fields are good places for learning about a particular kind of work while playing with peers. This trend of experiential learning reveals how children are engaged in experimental field activities from an early age like in the cases of Meka Damtew and Aynadis Misaw. In this kind of learning system, children seem unaware they are learning; rather, they often see learning as fun and play as part of everyday life. Here play is integral to the way children learn.

My ethnographic material from Kibtya reveals that knowledge is acquired in various forms through different age levels and gender. For example, children are more knowledgeable about grazing lands and particular behaviours of their animals. Women are knowledgeable about household activities such as storing seeds and making household tools; older farmers are knowledgeable about the weather, the soil, seed diversity and so forth. Fikru Seid (25) is the son of one of my informants, Ato Seid Asen. He is currently a teacher at Bazura elementary school, located about 20 km north-east of Kibtya. In his childhood, Fikru Seid was particularly interested in sheepherding, so he spent most of his time with sheep. He used to shepherd about 120 sheep at a time. This opportunity provides him with ample knowledge about different behaviours of sheep. For example, despite the large number of sheep, he used to be able to identify which sheep was sick. He was also able to identify the behaviour of sheep when lambing time was

approaching, so he used to arrange a comfortable place for his sheep to deliver (giving birth). He also used to use a special technique to help sheep deliver more easily. Fikru Seid explained that when sheep are sick, they would often be restless and lie down now and then; the sick sheep often lose interest to graze and drink water. Such an ethnographic account reveals that the shepherd can learn through his interactions with sheep, so that knowledge is not simply ‘about’ sheep but is learnt through interaction with them. This reveals how learning in farming life can take place and the many ways in which knowledge is acquired through peoples’ interaction with the physical world in which they are living (Suchman, 1987; Collins et al., 1992). In this vein, one can see that children’s involvement in work in the field and in household activities is essential, as this is the only way to learn, gain experience and acquire knowledge in the context of farming livelihood.

In sum, farmers’ knowledge and understanding of diverse life ways seems to be the result of interaction with each other and with the natural environment through an evolving process since childhood. The process of knowing could start from relatively easy activities (such as rearing of animals, distinguishing between weeds and crops) to more complicated tasks like ploughing and differentiating seed diversities. In other words, children would start weeding (which is the easier identification exercise) and rearing of animals at an early age (from 7 to 13); as they grow older, they would proceed to the more sophisticated process of ploughing and understanding diverse seed characteristics in a range of farming and environmental contexts. As described in the introductory section, the following section focuses on farmers’ understanding and experiential knowledge which is acquired through a gradual process of interacting with the physical environment and with other people.

Farmers’ knowledge of seeds in Kibtya

A ‘freelisting’ exercise was carried out to identify the prominent seeds in Kibtya so that the research draws upon extensive accounts of the socio-cultural, economic and political aspects of farmers’ seed management, focusing on identified domains of seed. Puri explained that ‘freelisting is used to check whether the domain is locally salient or meaningful ... it can be analysed to compare informants’ different perceptions of what items are important’ (2011b: 147). As indicated in the Table 5.1, twenty respondents of both sexes were involved in the

freelisting exercise, which helped me to understand the comprehensive seed knowledge of Kibtya's farmers across different ages and sexes. Undertaking the freelisting exercise also helped me to validate the information provided by different individuals.

Table 5.1: Freelist matrix in Kibtya

13	Niger seed	12	Grass pea	11	Sorghum	10	Flax	9	chickpeas	8	Fenugreek	7	Lentils	Peas	Bean	Teff	Wheat	Barley	1	Sequence of prominence
		0	0	11		10		9		8		7	6	5	4	3	2	1		F 34
		0	9	0		11		6		10		5	8	7	1	4	3	2		F 35
		0	7	8		0		6		0		0	0	5	4	3	2	1		F 40
		0	0	0		5		0		0		0	6	2	1	7	3	4		F 42
		0	6	0		5		7		0		0	0	0	3	4	2	1		F 30
		0	0	0		0		0		0		0	4	5	3	0	1	2		F 60
		0	0	0		0		0		0		0	4	5	3	0	1	2		F 52
		0	0	0		0		0		0		0	4	5	3	0	1	2		F 44
		0	0	0		0		0		0		0	4	5	3	0	1	2		F 40
		0	0	0		8		0		0		5	7	6	4	3	2	1		F 55
		0	6	0		0		7		0		0	4	3	2	0	5	1		M 35
		0	6	8		0		7		0		0	5	4	2	0	3	1		M 58
		0	8	9		6		9		0		0	4	3	2	7	5	1		M 60
		0	9	0		7		8		0		0	5	6	4	2	3	1		M 60
		0	0	11		7		10		6		8	9	5	3	2	4	1		M 42
		0	9	0		8		10		6		11	7	4	3	5	1	2		M 31
10		8	9	9		11		7		0		0	6	4	5	3	2	1		M 58
0		0	0	0		0		0		0		6	5	4	3	0	2	1		M 55
0		0	0	0		0		0		0		0	6	5	2	4	3	1		M 35
0		0	0	0		0		7		8		0	3	2	4	6	5	1		M 65
0.05		0.45		0.30		0.50		0.60		0.25		0.30	0.90	0.95	1.00	0.65	1.00	1.00		Frequency
10.00		7.56		9.33		7.80		7.75		7.60		7.00	5.40	4.47	2.95	4.08	2.55	1.45		Average rank

Ten female respondents with ages ranging from 34 to 60 and ten male respondents aged between 35 and 70 were asked to name crops they know in the Kibtya area. Respondents were selected after long consultation with my key informants at different occasions such as wedding, social work (debo, agmas etc) and public meetings. These were selected in order to broadly reflect differences in age, gender and farming experience.. Regarding school children, I use the principle of non-probability sampling (Newing, 2011) in which I went to Kibtya elementary school and asked a few students general questions such as to what extent they participate in farming, what do they generally know about seeds etc. so that I bring them to join the free listing and ID exercise (see details of ID exercise in subsequent section). Both the free listing and ID exercises are used as a way to have initial understanding on farmer's knowledge on seeds at different age levels and gender. These exercises highlighted broad trends that were subsequently explored through further in depth research including through participatory observations, informal and semi-structured interviews as well as focus group discussions. (see details in subsequent sections of this chapter and chapter 6)

All respondents were asked (individually) to name all the seeds they know in Kibtya so that the freelist matrix can be used to analyse the information based on the frequency of naming by each respondent. In the freelist exercise, 'the assumption is that the more salient an item is in a domain, the more likely it is to be mentioned sooner and the more people will mention it' (Puri, 2011b: 150). On the whole, thirteen different crops are identified in the freelisting matrix, of which clusters of seeds such as barley, wheat and bean are found to be prominent as most respondents name them sooner or later. During my discussion with farmers (after the freelist exercise), most of them (particularly old farmers) frequently mentioned barley and they often called it the 'king of crops' (see detail in a subsequent section of this chapter). Wheat is also prominent in relation to the increased promotion of new wheat varieties (HYVs) for maximizing yield. When it comes to *teff*, most informants explained that poor farmers do not commonly use *teff* for consumption because they prefer to sell (it has high market value) in order to buy cheaper crops. Hence, one can say that *teff* would not be prominent for most farmers (compared to barely, wheat, bean and pea) except for those farmers (better off) who use it for consumption.

Pea, lentil and *teff* were also mentioned by many respondents after the first prominent cluster of crops (barley, wheat and bean). The least mentioned crop was niger seed followed by grass pea and sorghum, respectively. According to many informants, niger seed is often grown best in lowland areas (*kola*) and that it was introduced recently, about 20 years ago (a few farmers argue it was longer than 20 years ago). Even in contemporary farming, most Kibtya farmers do not give priority to growing niger seed; rather, they buy it from local market when necessary (particularly for cultural and ritual practices such as *agmas*, *shonat* and *duaa* – see detail in Chapter 5). Grass pea is often planted on a small plot of land (usually at the border of farmlands) and used as forage for animals. Planting grass pea is not a priority for most farmers owing to the fact that other prominent crops occupy the scarce land. Sorghum is also planted on a small scale by some farmers, mostly in backyards, so it is not common for everyone to grow it on a regular basis. In sum, although farmers' selection criteria and preference of crops for different purposes differs greatly from one person to another, the most prominent seeds are said to be barley, wheat, bean, pea, lentil and *teff*, as listed on the freelist matrix, respectively. This trend indicates that such types of seeds are known by almost all farmers, so they are being used either for consumption, exchange or marketing (for supplementing subsistence). Thus, undertaking of the freelist exercise helped me to have an initial test of farmers' seed knowledge in Kibtya. However, it has limitations when it comes to understanding how such knowledge of seeds was acquired, because such an approach is designed to raise questions through a participatory framework which lacks rigorous understanding of people's knowledge from different perspectives. This led me to undertake empirical investigations through various forms of ethnographic fieldwork in which I explored the multifaceted accounts of knowledge acquisition in the course of people's interaction amongst themselves and with the physical environment.

I learned that Kibtya farmers seem to have ample experience with respect to characteristics of different seeds. For example, some informants explained that flowering crops (such as beans, peas and lentil) in particular are vulnerable (once they mature) to direct sunlight as their seeds may spread (burst) if they are collected during the day. So much so that legumes should be collected during the morning when there is moisture which can protect seeds from being spread out of their cover (due to extreme dryness). One informant took me to his farm to show me how he decides when to start collecting legumes such as bean, pea and lentils when they are ready for harvesting. I

learned that the kernels of legumes cannot equally be ready for harvest; rather, the lower part is often ready earlier, followed by the middle part, and finally the top part could be last to mature. Some Farmers Seeds (FSs) including bean and pea take a long time to mature and when they mature, they are not ready at the same time which implies that they are better for cooking at home and not for harvest all at one time to be sold. Despite the seeds' different rates of maturity, farmers often collect (harvest) seeds once the lower rows and the first two or three spikelets are mature, because the upper rows would receive heat and mature while they are piled at *awdima* (before threshing).

Most informants reported that all types of crops need sufficient moisture up until they are mature. Hence if the rainy season starts early (June) and ends late (late September), the likelihood of increased productivity is certain, where production would be decreased otherwise. Some seeds such as legumes (except water bean) cannot be seeded if rain starts late. Farmers only seed *teff* and wheat in this case. Some informants explained that legume crops often need less fertile soil. If legume crops are seeded in a fertile soil, they would be overgrown and stay longer before holding seeds and eventually will not be productive. Many informants also explained that waterlogged land is often used for water bean (*yewuha bakela*). Wheat can also be seeded in a waterlogged soil but it needs a special type of farming in which farmers plough to form a raised seed bed with furrows in order to drain excess water. When it comes to barley, it will be productive in a well-drained soil; the waterlogged soil for barley is not recommended as it would reduce its productivity. A similar result was produced in experiments at Fajji in Ankober wereda (Amhara region) in 1999 (Mulatu and Grando, 2006). Mulatu and Grando state that it is not advisable to plant common barley (compared to waterlogging resistant varieties) in waterlogging soils, because production could be reduced significantly by up to 94% (2006: 66).

Kibtya farmers also seem to have experiential knowledge about identification of different soil type so that they act upon which seed diversity goes well with a certain type of soil. Some informants described how indigenous and introduced varieties of bean can be seeded in different soil types. One informant explained that:

we sow pea (*habesha ater/agree ater*), introduced bean (*Yeferenj-bakela*), and water bean (*yewuha-bakela*) at three different types of soils. *Habesha ater (agree ater)* grows well in red soil. Introduced bean (*Yeferenj-bakela*) grows in black soil (with no waterlogging) and water bean (*yewuha-bakela*) can grow well in waterlogging black soil.

When it comes to seasons, farmers sow *agay-teff* in April (about two months before the main rainy season starts) because they want to ensure it gets sufficient water from the regular rainy season (usually June–mid September) so that it will mature in October. *Bursa-teff* is supposed to be sown in July and is expected to have matured in December. *Siyete-teff* is sown in May or June depending on the rain and is supposed to be matured between October and November. From this, one can see that Kibtya farmers have a system of distributing risk along with different seasons in order to avoid losing all their seeds if one or two of seed types fail due to lack of rain or other natural calamity. All farmers (even in different ecosystems) seem to adapt how they handle natural resources based on their own contexts. For example, in the case of *tatora* plantation (*Scirpus tatora*) in the Andes (Lake Titicaca), fishermen adapt a range of practices, where they developed practical and context-based knowledge in terms of measuring the depth of planting *tatora* plant species and identifying particular seasons. Orlove explained that:

Villagers describe the depth to which they waded out as ‘half a leg’ deep ... the depth can also be measured as four handbreadths or as ‘half an arm’ ... the usual time to plant is in September or October and if they plant earlier, the lake could continue to fall, and the sun would dry the new plants. (2002: 176–177).

In order to carry out such kinds of routine practices, farmers often do not necessarily need lots of thinking, rather they simply know which type of practice should be carried out when, and in what kind of environment. Bicker et al. assert that ‘knowledge is diffuse and communicated piecemeal in everyday life ... people transfer much knowledge through practical experience and are unfamiliar with expressing all that they know in words’ (2004: 2). In his work on ‘non-formal learning and tacit knowledge’, Eraut also explained that:

Action is describe as *routinised* when actors no longer need to think about what they are doing because they have done it so many times before. Routinisation starts by following other people ... Learning by repetition enables the actor first to reach the stage where the aid of a person or checklist is no longer required and then to progress to a future stage

where an internalised explicit description of the procedure also becomes redundant and eventually falls into disuse. (2000: 123)

In the same manner, Kibtya farmers make use of their experiential knowledge, which has been internalized through practical learning, repetition and action, so that they acquire good understanding of the basic characteristics of different crops including length of maturity time, nature of seasons (such as knowing when rainfall is due) and so forth. Thus, such experience helps them to determine which crop should be sown at which time of the year.

For example, *agay-teff* needs about six months (April–September) before it matures, so if farmers miss the rain in April, then they will not sow *agay-teff* that particular year. Ato Misaw Guale, explained that *agay-teff* needs lots of rain to be productive. In the contemporary climate, the amount of rain in Kibtya is reducing and becoming erratic so farmers are shifting towards *bursa-teff* and *seyete-teff* which have shorter maturity time (about four months) compared to *agay-teff* (six months). In other words, Kibtya farmers are tending to replace *agay-teff* with *bursa-teff* and *seyete-teff* because the chance of good productivity of *agay-teff* is very low under reduced rainfall in Kibtya's contemporary context. This shows that continuous adaptation is one of the main features of experiential knowledge under each farming system (Beshah, 2003).

In this way, Kibtya farmers adapt the same approach for other types of crop according to their respective characteristics. Varieties of barley, for instance, need to be sown at different times of the year. Availability of rainfall matters for farmers in deciding which variety is to be sown in which season or a particular month. Hence, having knowledge about the nature of different seeds is significant for Kibtya farmers in order to take appropriate action during scarcity or abundance of rainfall. For example, in the event of an abundance of water, farmers use *yewuha-bakela* (a particular variety of bean, which resists waterlogging); in the event of too much weed, farmers sow *meke-wheat*, which has overriding capacity of weeds; they sow *sene-gebs* (one of the barley varieties) for its fast maturing ability and so forth.

Kibtya farmers are trying to adapt and get to know the characteristics of newly introduced seeds too. Some newly introduced seeds (HYVs), as mentioned by farmers are: *malefia-wheat*, white-

wheat, *limat-wheat*, *degolo-wheat*, *assossa-wheat*, *robe-wheat*, *selbo-makoroni-wheat*, *global-wheat* and *gofer-wheat*. Depending on how long a particular seed has been grown since its introduction, some farmers are becoming familiar with these new seed varieties so that they can identify the seeds from their appearance or nature when they look at them. Ato Misaw Guale explained that the appearance of *malefia-wheat* is very small but it is as productive as other new varieties. The productivity of *assossa-wheat* is not attractive compared to other new varieties and the appearance of the crop is dwarfed whereas the seeds are big. *Robe-wheat* is another new variety which has the same appearance as that of *meke-wheat* (FS) and its productivity is not very attractive, being the same as *assossa-wheat*. *Degolo-wheat* is one of the new varieties with a very good productive capacity. Another new variety is known as *limat-wheat*, which a number of farmers (particularly ‘model farmers’) are widely using as it is also productive.

Seed diversities and farmers’ associated knowledge

Farmers in Kibtya have ample experiential knowledge about their local crops across⁴¹ and within⁴² species and they use different methods to identify seed diversities. When I carried out the identification (ID) exercise (indicated in Tables 5.2) (see detail of selection criteria in the above section under free listing exercise), I observed that a number of farmers were able to identify different seed diversities by weight, appearance and even by hitting the spike and hearing a particular sound (for *temej* seed in particular). The classifying ability differs by gender and age. For example, men are more knowledgeable to identify seed diversities by their appearance and spike, whereas women are more knowledgeable in identifying seeds by kernel, colour and weight. This kind of gender-based identification of crops seems to vary according to distribution of job by gender. Men are often involved in ploughing, cutting, weeding and threshing of crops so that they would identify crops by their appearance and spike while they are in the ground (before threshing). Once crops are separated from the spike and stored, women are the ones who often handle them at household level, so they (women) would be able to identify crops by kernel, colour and weight. When it comes to details of seed management, I found that women, (particularly old ones) are knowledgeable in terms of how pure breeds can be selected, stored and maintained. Men (particularly young ones) are often engaged in activities such as

⁴¹ For example, seed varieties between barley and *teff* and bean and lentil and wheat, etc.

⁴² Seed varieties among the same crop, e.g. barley varieties, *teff* varieties, wheat varieties, etc.

ploughing, sowing seeds, cutting and threshing so that their knowledge on seed storage and identification by kernels is slightly limited compared to women's. For example, when I ask men about seed storage and selection, they often referred me to their wives or some women in the household. This implies that different kinds of knowledge relate to different practical engagements with seed so that identification and knowledge about a particular seed would differ between men and women.

Further, the ability to identify particular seed diversity depends on the individual's personal experience. For example, if one farmer identifies a particular seed by its kernel, another farmer might identify the same seed by its leaf or appearance. W/o Maritu Kead, a woman farmer, identifies *kuchbiye*-wheat and *gunde*-wheat by their appearances. She said that *kuchbiye*-wheat is shorter than the *gunde* one. Ato Misaw Guale explained that the spike and spikelet of *meke*-wheat is red in colour but kernels are somewhat white. Further, he said that *meke*-wheat has many spikes by appearance. Some crops even need particular attention and experience in order to be identified. For example, the nature of *difin-temej* (also known as *etif-temej*, *mulu-temej* and *shifin-temej*) is a bit difficult in terms of identification because its spike is arranged quite the same way as barley's. I found that some of the informants were not sure to decide whether a particular seed was *temej* or barley. One farmer explained that:

the nature of *temej* looks like barley. It is very difficult to identify *temej* from barley and wheat at least at first glance. That has happened to me and as I told you, we grow two types of *temej* here in Kibtya area. Particularly the first type (*etif-temej*) has a very similar appearance with that of barley.

Another farmer explained that unlike *netela-temej*, the kernel of *difin-temej* cannot be separated from its spikelet during threshing, so it can be confused with barley by those who are not familiar. In order to separate the kernel from the cover (spikelet), it needs to be roasted and crushed further. Another way of identifying *difin-temej* is by looking at its stem (while it is in the ground before cutting). The stem of *difin-temej* often grows straight upward with no inclination to one side. Its appearance is like that of lowland (*kola*) barley. Farmers can also identify *difin-temej* because it often lags behind other crops in terms of its time to maturity. In this case, most

farmers can identify *difin-temej* as they can see that it is not yet ready while other crops are ready to harvest.

Netela-temej (also known as *senterej-temej*), on the other hand, is not difficult to identify as its spike is arranged in only two rows and the seed can easily be separated from its cover during threshing. The classifying or identification ability of farmers also works in the same manner for other seed diversities. There are many seed diversities which are difficult to identify as they are very similar to one another. For example, *seyite-teff* looks like *nech-teff* (particularly in the ground), where sometimes people cannot recognize which is which. Ato Misaw Guale and Ato Tamene Mengistu said that the head of *siyite-teff* is small compared to *nech-teff* so that they can easily identify each variety by their appearance; but it is very difficult for those who are not familiar with these seeds.

From a range of discussions and participant observation, I learned that farmers develop seed identification ability through time. Some farmers explained that they started identifying seed varieties since they were 15 years of age. It seems that identifying seeds across their species (e.g. between barley, *teff*, lentil, beans and so forth) is not difficult, but the challenging task is to distinguish seed diversities within the same species (e.g. barley diversities, *teff* diversities, wheat diversities and so forth). Most informants reported that they had not been able to identify seed diversities within the same species until they became mature (above 30 years of age on average), which is the common age for young farmers to spend more time in agriculture independently.

The following identification (ID) exercise (Puri, 2011b) reveals how the seed knowledge is distributed among different age groups and sex. I carried out two ID exercises to test the differences in farmers' knowledge. Respondents were asked to identify seed diversities (Table 5.2) within the barley species. Barley is chosen because it was identified as one of the most prominent crops during the freelisting exercise. Barley also has a number of diversities compared to other crops, so all types of barley diversities (grown in Kibtya) were displayed. Respondents were also asked to identify barley diversities before they were separated from the stalk (as they appear with their spikelet's) and after separation from the stalk (in the form of kernels). The general results show that identification of seed diversities within the same species is not a simple

task.. The first columns of the table show the correct answers (agreed by most respondents), so it is used as a reference for the rest of the columns. In other words, any entry differing from the first column is regarded as an incorrect answer, so it is marked in red.

Table 5.2: Farmers' seed identification knowledge – Within the barley species

Barley iversity	M 60	M 24	M 54	M 42	M 58	M 38	M 60	M 47	M70	M 19	M 17	M 14	F 35	F 55	F 60	F 50	F 44	F 55	F 35	F 36	F 35	F 28	F 16	F 14	F 17	F 20	F 16	F 14
1	S.te mej	N.te mej	N.te mej	S.te mej	S.te mej	S.te mej	N.te mej	S.te mej	S.te mej	S.te mej	N.te mej	S.ge bs	S.te mej	N.te mej	N.te mej	S. temej	N.te mej	N.te mej	N.tem ej	S.te mej	S.te mej	S.te mej	S.te mej	S.te mej	S.te mej	N.te mej	N.te mej	Geb s
2	N.geb s	W.ge bs	N.geb s	N.geb s	N.geb s	R.ge bs	N.ge bs	N.g ebs	N.ge bs	Nta	Geb s	Geb s	Not sure	N.ge bs	Nta	Nta	Nta	Nta	Nta	Nta	Nta	Nta	Nta	Geb s	Nta	Nta	Nta	Nta
3	R.ge bs	R.geb s	N.geb s	R.geb s	N.geb s	N.ge bs	Not sure	N.geb s	Not sure	Not sure	Geb s	Geb s	N.ge bs	Nta	Nta	Nta	Nta	Tegad me	W.ge bs	W.ge bs	Not sure	R.geb s	Not sure	s.geb s	Not sure	Geb s	Geb s	Not sure
4	D.tem ej	N.te mej	E.te mej	D.te mej	E.te mej	E.te mej	D.te mej	Sh.te mej	D.te mej	N.te mej	E.te mej	N.te mej	D.te mej	D.te mej	D.te mej	M.te mej	Sh.te mej	D.te mej	E.te mej	E.te mej	E.te mej	D.te mej	E.te mej	E.te mej	R.ge bs	E.te mej	E.te mej	N.te mej
5	T.geb s	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs	T.ge bs
6	S.ge bs	Not sure	S.ge bs	W.g ebs	S.ge bs	S.ge bs	S.ge bs	S.ge bs	S.ge bs	W.ge bs	Not sure	Geb s	S.ge bs	S.ge bs	S.ge bs	S.ge bs	S.ge bs	S.ge bs	S.ge bs	S.ge bs	S.ge bs	S.ge bs	Not sure	S.ge bs	Not sure	S.ge bs	S.ge bs	Geb s
7	W.ge bs	W.ge bs	W.geb s	Not w.geb s	Not sure	W.ge bs	W.geb s	W.ge bs	Not w.geb s	R.ge bs	Not sure	Not sure	Not sure	Not sure	Not sure	Not sure	Not sure	Not sure	Not sure	Not sure	Not sure	Not sure	Not sure	Geb s	Not sure	R.ge bs	Geb s	Geb s

Key

S.temej = Senterej temej (sometimes known as Netela temej)

N.gebs = Nech gebs (also known as, Nechta)

R.gebs = Re gebs

D.temej = Difin temej (also known as difin temej , shifin temej or mulu temej)

T.gebs = Tikur gebs

S.gebs = Sene gebs

W.gebs = Workiye gebs

Red mark = incorrect ID

The ability to identify seed diversities depends on age and sex. Most respondents over the age of 40 identified the listed seed diversities. It seems teenagers and young farmers below the age of 40 are less knowledgeable than their elders on some seed diversities. Women are able to classify most seed diversities compared to men and this might be related to the amount of time women spend with seeds. Amongst all the listed seed diversities, some barley diversities such as *re-gebs* and *workiye-gebs* are the least identified seeds. This is likely related to the fact that these seeds were introduced from the nearby highlands and not very common to all farmers. The existence of seeds as ‘local’ or ‘foreign’ is defined depending on whether the particular seed has been grown for more than 25 years (which is one farmer generation) or if a farmer mentions that his parents used to plant that particular seed (Louette et al., 1997: 24; Louette and Smale, 2000: 26). This implies that new seeds could become ‘local’ over time so that farmers would adapt their practices with the seeds’ characteristics. Ato Misaw Guale, for example, explained that one of the new wheat seeds (*degolo*) was introduced more than 20 years ago, so he is familiar with its planting and production characteristics.

However, the most important point to consider is to what extent the introduced seed is integrated into the local system and how many farmers are regularly planting introduced seed in place of or alongside their indigenous seeds. For example, some informants explained that *re-gebs* and *workiye-gebs* are introduced from the nearby highlands such as Yekoso and Besober areas. Though these barley seed diversities were introduced more than 25 years ago, the level of knowledge about them is not substantial compared to other indigenous types of barley. As revealed in Table 5.3, *workiye-gebs* is recognized by only six farmers and *re-gebs* by three farmers out of twenty-eight respondents. On the other hand, the indigenous *senterej-temej*, *tikur-gebs* and *nech-gebs* are the most identified seed diversities. Farmers often identified these seeds through colour and appearance. For example, most respondents stated that they identified *tikur-gebs* and *nech-gebs* by their black and white colours, respectively. Regarding the *sene-gebs*, its kernel is uniquely thin and its colour somehow tends to grey, which makes the seed easily identifiable. *Senterej-temej* has a thick layer and its kernels are arranged in two lines (side by side). *Difin-temej*⁴³ was difficult to identify as it is similar to *nech-gebs*, but most respondents (particularly those over 20 years of age) identified it by

⁴³ ‘*Difin-temej*’ is also known as ‘*shifin-temej*’, ‘*Etif temej*’ and ‘*Mulu temej*’.

touching and feeling some sense of softness. Figure 5.1 shows the ID exercise in action, whereby Kibtya farmers are trying to identify various forms of seeds



Figure 5.1: Seed identification exercise in Kibtya

Such ethnographic material and observation would support the argument discussed in the above sections about experiential knowledge, whereby touch and feel are important as well as sight. In this regard, one can say that knowledge is not just ‘cognitive’ but involves the whole body existing in a field of unfolding relations with other people, and other elements of the physical environment (Ingold, 2000).

Farmers’ seed selection to maintain pure breeds

In Kibtya, the selection process of Farmers Seeds (FSs) is a continuous one because farmers seem to have an understanding of the possibility of any given seed (pure breed) to be mixed with other varieties in the process of harvesting, threshing and storing. As Brush states, this is likely to be true in most farming societies:

In all farming societies, the balance and momentum of agriculture is maintained by tinkering and adjusting technology – selecting seeds, experimenting with new techniques, improving tools, adopting crop varieties and tools from other farmers. (2004: 72)

Kibtya farmers can identify the unwanted variety by its appearance at various levels (from seeding up to threshing). Most informants affirmed that they can identify the unwanted seedling right after germination, so they often remove it during weeding. If those unwanted seedlings are not yet totally removed, farmers will check them when the seed produces spikes at the farm, so they can pick them before harvesting. While we walked on Ato Tamene Mengistu's farm, he showed me some heads of barley within the farm of black wheat and said that:

as you can see, this is a farm of wheat crop, but some barley crops are mixed. The mix may have happened last year accidentally on *awdima*, or in the house (during storage) ... these few mixed barley stalks (within the field of black wheat), will influence the purity of the wheat production if I leave them until harvesting ... so I will pick those few heads of barley from the farm in order to maintain the purity of my black wheat production.

Another type of selection process is that if there are too many heads of an unwanted variety, farmers prefer to pick the right breed at *awdima* rather than spending a long time in the whole farm. In this manner, farmers keep the right breed and often they will give it to their wives to save it in *gota* (a special container often made by women) for next year. One can see that farmers are well aware of the fact that if a given seed is not regularly maintained during the various steps of the harvesting process, the purity of production will be reduced as there will always be a chance of mixing between seeds. Particularly seeds of the same species are difficult to separate once mixed. For example, different diversities of barley (such as white-barley, *re-barley* and *workiye-barley*) can be mixed with each other. When this happens, it needs a particular skill in identifying each sub-species, so knowledgeable farmers undertake selection activities to maintain pure breeds. The same would apply to *teff* diversities, where *bursa-teff*, *nech-teff* and *siyte-teff* can be mixed with each other. Ato Misaw Guale said that:

We often plant a particular diversity of seed at a time but there is always a great extent of chance in terms of mix (particularly during the process of threshing) one type of seed with other types of seeds because, we often thresh all types of crops within the same *awdima*.

The implication is that if farmers failed to select the right breed every year, the quality will be reduced by a quarter each year (as some farmers assume). Eventually, unwanted seed becomes dominant over the intended pure breed which results in extinction of a particular diversity. Kibtya farmers also undertake another process of seed selection in which they introduce selected seeds from their neighbouring communities. This type of selection (through farmer to farmer introduction of new seeds) is based on personal promotion of individual farmers, whereby farmers would display new seeds on their farmlands. One farmer explained how some barley diversities such as *werkiye-barley* and *re-barley* were introduced from nearby places known as Beso-ber and Yekoso which are highland areas (*dega*). *Nech-teff* and *bursa-teff* were also introduced from nearby places known as Embela-seda and Bazura which are lowland areas (*kola*). Farmers introduced these seed diversities through seed exchange (or bought them in the market) with peer farmers in the highlands (*dega*) and/or lowlands (*kola*). Here, one can see that acquiring knowledge involves incorporation of other elements through an ongoing process of adaptation and learning that incorporates seed, agricultural inputs and various forms of knowledge from elsewhere. Moreover, one can see that in the context of smallholder farming (like that in Kibtya), there is a continuous introduction and selection of new seeds through farmer-to-farmer exchange and this implies a continuous adaptation and enhancing of productivity. This shows that farmers' knowledge in selection, maintaining and distribution of seeds is crucial in terms of enhancing production while ensuring local seed supply through continuous introduction of different seed diversities to the existing seed pool, whereby ensuring seed diversity would help farmers to safeguard food security and fulfil nutritional needs (Shiva, 2001).

Farmers' seed selection to decide priority

For Kibtya farmers, there seems to be a number of criteria in deciding which crops to give priority to. Many informants viewed different crops according to their personal experiences of a particular seed, so it is difficult to conclude whether a particular crop is a priority for Kibtya farmers. Kibtya farmers choose a given seed based on its economic and consumption value. They often give priority to crops which fulfil both economic and consumption value at the same time. For example, most people prefer *teff* for consumption, so it has a good market value compared to other crops. Amongst *teff* diversities, *nech-teff* (the white one) has more market value than *seyete*, *bursa* and *agay* types of *teff* crops. *Seyete-teff* (mixture of *bursa* and *nech-teff*) also has good market value next to *nech-teff*. So much so that Kibtya farmers seems

to give priority to grow *teff* crop if the season and land situation allows them to. Ato Misaw Guale explained that all diversities of *teff* crops (*agay*, *bursa* and *seyete*) grow very well in the Kibtya area, so these FSs are important for farmers in terms of preference for consumption and marketing. Residue of *teff* crop is also important for animal feed and lamination of houses when it is mixed with mud.

Some farmers argue that legumes are very important to make sauce and for consumption after main meals or during coffee time; there is also a stable market for such types of crop. Next to barley, Ato Mekuriaw Eshetu gives priority to beans, because he thinks that beans are a multi-purpose crop. He said that ‘it can be boiled or roasted to be used as snack; it can also be used as sauce ... if there is a knowledgeable woman, bean can also be baked as *injera*’. Memre Sahilu Zewdu argues that wheat is a multi-purpose crop; it can be used to bake bread, *injera*, *kolo*⁴⁴ and so forth. W/o Maritu Kead and w/o Birke Yimer (both women) said they liked wheat because of its multi-purposive cooking value. For example, wheat can be baked as bread and *injera*, roasted as *kolo*, brewed as local beer (*tela*) or liquor. Further, some argue that productivity of wheat is better than others so that one may sell some surplus to buy other types of seeds if needed. Ato Kebede Asen articulates such argument and explained that: ‘I often get five quintals of wheat from the same land which only gives two and a half quintals of *teff*. By selling two quintals of wheat, I can buy two and a half quintals of *teff* if I need to. Therefore wheat is better’. Some give priority to barley and wheat crops as they need them mainly for consumption and for sale depending on the amount of surplus they have at home. Ato Mekuriaw Eshetu and Sheck Nuru Molla prioritize barley because they think that barley is a multi-faceted crop producing different types of food and beverages including local beer (*tella* [local beer] or *bukri* [local non-alcoholic beer], *injera*, *kollo*, *bread* and *besso*⁴⁵). Further, barley is a fast maturing crop, so that poor farmers need it particularly during the pre-harvesting season. Some farmers explained that if it rains in May, a particular diversity of barley (*ginbote-barely*) is a priority crop. If farmers miss the rain in May, then they would sow another type of barley called *sene-barley*. Both *ginbote-barley* and *sene-barley* are fast maturing crops as they can get ready for harvesting by the end of September or October. The pre-harvest season, particularly July–October, is a difficult time especially for poor farmers,

⁴⁴ Roasted grain often served as snack during social gatherings.

⁴⁵ A kind of fast food prepared from barley flour.

so these barley varieties are locally known as *dirashot*,⁴⁶ which means ‘life saver’. According to research in west Africa such as in Sierra Leone (due to irregularity of rainfall), and in Nigeria (due to drought), the same pattern of pre-harvest hunger is observed (Richards, 1990). Richards asserts that: ‘food supplies are always in short supply, and belts are tightened before every harvest. Intense pre-harvest hunger due to unseasonal rainfall occurs in Mogbuama’ (1990: 268).

For some farmers, barley is an important crop and is even nicknamed as ‘King of crops’ because these farmers believe that barley has a significant economic and nutritional value in farmers’ livelihood. Asfaw indicates that, ‘study of traditional sayings, lines in poems, beliefs, value systems and whims shows the significance of barley in the life of Ethiopians to the extent that barley is referred to as “the king of grains”’ (2000: 94). When it comes to market value, barley is always needed by consumers. Such views of barley, as a ‘king of crops’, signifies the importance of symbolic representation. I had an interesting discussion with some old farmers in relation to their knowledge about barley. Most of them told me that during the regime of Emperor Haile Selassie, barley used to be respected as it used to symbolize kingship, food security and peace. Sheck Nuru Molla (58) is a religious leader and farmer. He said that barley was the first crop given to the first man (Adam) from ‘Allah’ (God). Likewise, Nash reported that barley seems to have been the first cultivated cereal:

It is often said that barley was the first of the cultivated cereals, the grain being used to make bread as well as for feeding to cattle and horses. The ancient Hebrews of the patriarchal period (probably the late Bronze period) ate barley bread. The Greeks of the Iron age used barley to make *Alphita*.⁴⁷ (1985: 5)

On the other hand, some argue that priority and selection criteria depend to what extent the soil type, availability of land and the amount of rain is suitable for a particular crop. Hence, farmers cannot decide on which crop they should give priority as they are often interested to sow as many diverse seeds as possible if the situation of resources (land and seeds) and the weather allows them to do so.

⁴⁶ Any fast maturing crop can be referred to as *dirashot*.

⁴⁷ ‘A food which took the place of present-day bread and which was prepared by gentle roasting, followed by coarse grinding and finally, by mixing with oil, water and condiments’ (Nash, 1985: 5). This kind of preparation of barley as bread and as *alphita* is similar to what Kibtya farmers prepare as ‘*gebs-injera*’ and ‘*beso*’ for consumption.

Women's knowledge

In terms of the different roles of men and women, I learned that women are the ones who hold double responsibility, as they are involved both in farm and household activities. Almost all informants confirmed that women are responsible for saving seeds, which includes seed selection, storing and making of household tools. In this regard, I gathered that women have detailed knowledge about storing seeds in the right place and in special containers (made only by women), protecting seeds from moisture, rats, termites and so forth. My discussion with a couple of women confirms that they also play a significant role in prioritizing seeds, deciding seasonal plantations and maintaining quality of seeds. One can assume different reasons why women do most of the work in seed management and other tasks in farming life. Despite men's domination in making decisions because of the long-lived Amhara culture and control over most types of resource, it seems women are implicitly recognized as important decision makers in many aspects of farming life. Particularly those women who are fertile and give birth are respected and trusted. Another reason could be the fact that women are the ones who take on much more of the work burden than boys since childhood which makes them knowledgeable about various issues related to seed management, cooking, raising of children, handling of animals and so forth.

W/o Maritu Kebab (woman informant) explained that girls are involved more than boys when it comes to household activities and these often start in their early years. For example, she started working at home from the age of 7. At this age, she used to fetch water, collect firewood, and learn about the use of some household materials. As she grew up, she used to carry forage plants from farmlands, participate in weeding, cook food, clean house, and take care of calves and sheep. Then she used to mill grains⁴⁸ and carry out other activities in and out of home. Through the process of all these and many other activities, she became knowledgeable about rural livelihood as she is practising it on a day-to-day basis. After marriage, she lived with her parents-in-law for some years⁴⁹ and her mother-in-law taught her how to lead life as a mature woman when she joins her husband. Her marriage provided the opportunity to practise seed management as an independent woman, so she mastered

⁴⁸ Traditionally, there was no grinder to mill crops/flour, so women had to wake up before dawn and grind crops for cooking.

⁴⁹ Traditionally, girls get married at an early age, such as 12–13 and sometimes 9–10. In this case, their parents-in-law (parents of the male bride) are obliged to keep the female bride with them and she will live there until she reaches 15–17 years old.

identifying different crop diversities in terms of where and when a particular crop should be seeded. Once she had set up her own house (independent from her parents-in-law), she had neighbours and friends through whom she improved her knowledge through sharing experiences. She continued learning about many other things (from her parents, friends, parents-in-law and community) such as spinning and weaving to make traditional cloth as well as the skill of making tools for storing seeds, for cooking, and for many other household uses.

Other women informants have similar stories in which most of them grew up in a situation where there was lots of engagement with practices of seed management and associated farming activities. One woman told me that most of the time she uses a container made of bamboo for her seed. She also stores breeds in a container (*gota*) made of mud laminated with ash. The size can be designed to hold up to six quintals but the average *gota* can hold about three–four quintals. She explained that she stores breeds every year and keeps them as long as four years if she feels it is necessary. She explained, their husbands often make a wooden bed on which to rest the *gota* (made by women) off the ground, as the seed container must be well dried, ventilated and out of reach of insects and rats. Some seeds such as sorghum and legumes are easily threatened by weevils, and other crops could also need special care as they can be spoiled by hot weather conditions. In this case, one can see that such experience builds women's knowledge of seed selection and various forms of storing characteristics.

Some informants argue that the contemporary situation is different as their children are students and they are not spending enough time with their parents to learn how to do things through practice. The results from the ID exercise, observation, and discussion with students, reveals that most children cannot identify seed diversities within the same species. As explained earlier, acquiring knowledge (particularly related to identification of seed diversities) seems to be attributed to the amount of time the individual spends in farming. In other words, knowledge about identification of particular seed diversities would be acquired through exposure and experience with farming over a long period of time when one can learn about the unique characteristics of seeds through the repetitive process of growing at different levels. Evidently, young farmers who spend more time in farming are better than their peer students (of the same age group) in terms of identifying seed diversities. The following

section unpacks the impact of school education on the existing farming knowledge system and communication between parents and students. I use this section as a precursor to the next section which discusses future trends.

Interaction between school education and experiential learning and its impact in Kibtya

Though students sometimes help their parents in farming activities, they do not spend enough time to acquire solid farming knowledge such as ox-ploughing,⁵⁰ different characteristics of soil, seed diversities and their respective characteristics, weather conditions and so forth. Rather, students often spend their time either in schools, in reading, in dealing with homework (from schools), listening to radios and chatting with friends. Supporting this idea, Coe (2005) argues, in the context of her study of formal education in Ghana, that the approach of modern education does not permit local experiences and knowledge to be accessed at school, as children spend more time in school. Further, Coe explained:

With the expansion of mass education, children spend more time in school. As a result, they generally have less opportunity to learn local knowledge, closely tied to complex local social relations and ecologies. (2005: 4).

Some informants argue that though students are living within the context of farming, they are not active participants (compared to their peers as full-time farmers), so they do not gain much detailed farming knowledge. As students grow up in this way, they would no longer be interested in staying in agriculture, so they would either leave their parents for further education or look for a job elsewhere.

Ato Mekuriaw Eshetu (65) has seven children and five of them are students. He said that all his children are engaged in a range of farming activities at different levels. The two children who do not go to school are more knowledgeable than their siblings. He further explained that learning about farming and related activities needs lots of observation and practice, which entails that the learner should spend a substantial amount of time within the context of an agricultural livelihood. Despite there being a class on agriculture from first to fourth grade, which is mostly focused on classroom teaching, there is no regular class on agriculture above

⁵⁰ Ox-ploughing needs ample experience because one should get to know how to train an ox for ploughing, how to handle oxen while yoking and ploughing, how to fix the plough and many other tools, etc.

fifth grade. In other words, there is no contextualized lesson on agriculture and farming practices, so young generation in the context of Kibtya gives more weight to school education than experiential learning. In this way, students are no longer interested to spend much time with their parents, which affect their level of knowledge on farming. One student told me: ‘I would like to be a civil servant working in government offices or a teacher to live in towns and get a regular salary. Farming life is backward in terms of food [though there is food he doesn’t like the way it is prepared], clothing, sanitation and so forth’. This student is in grade 6 and his parents are well off. They have enough grains for meal, animals such as oxen, cow and sheep, so he could sometimes get milk or meat. However, he seems more interested in an urban life than a rural one, because he is inspired by what he sees and hears about ‘modern life’ in schools or from other sources.

Some parents argue that sending children to school is just a waste of time because schoolchildren do not value their culture, social relations and the lifestyle of their parents as they are inspired by what they see in schools, in towns and other places. As a result, they often quit their school education and end up either as street boys or migrate somewhere else. In contrast, some farmers are insisting their children pursue their education because they argue that the traditional lifestyle (in the context of subsistence and rain-fed agriculture) is no longer useful in terms of achieving a ‘better life’ for their children, but some students argue that completion of high school education per se would not guarantee a job. Most informant teachers and students confirm that most students cannot pass the national exam either to join universities or to join technical colleges. Failing to get into some form of higher education would worsen the possibility of getting a job. Students’ perception of education is associated with employment, which implies that they are increasingly losing interest in farming. Unemployment is a challenging issue even at the country level, as its rate exceeds 50% (Denu et al., 2005; Daniel, 2007). Daniel asserted that:

idle groups of young men rocking on the heels of their thick-soled leather shoes, hands in pockets, wearing clean button-down shirts untucked over loose-fitting jeans – such scenes are common in Ethiopian cities. (2007: 659).

Similarly, some students in Kibtya feel that they are in a hopeless position given what is happening to their seniors (high school graduates), as most of them end up messing around in Masha town, with no job, with nothing to be engaged with, but being alcoholic or chewing

some chat⁵¹ (an evergreen perennial shrub plant) (Lemessa, 2001). In this vein, students and youths are not prepared to develop their own creativity in various contexts of life, including agriculture, so most of them are becoming unemployed when they complete secondary school, or some of them quit their education and migrate elsewhere. Having seen such a trend, one can see how the future is challenging with the potential for social problems as the number of jobless youths grows.

The aforementioned accounts of school and experiential learning reveal a complex set of attitudes towards school education. Though parents and children list a number of challenges in relation to the impact of education, the general trend from my ethnographic material reveals that both parents and children are interested in education. However, one can see that the changing pattern of life, including school education and migration, is gradually separating students from being attached to day-to-day farming practices, so that the existing practice of transferring farming knowledge seems to be eroded.

Conclusion

This chapter has described local understandings of farming knowledge and the basis on which it is acquired. Various perceptions on acquiring knowledge are discussed under the broad categories of psychological and social studies. The argument based on psychological studies shows that the process of acquiring knowledge is purely cognitive, located inside the head of the individual person. For social studies, the crucial processes are interactional and contextual, in which knowledge can be acquired through the relationships among people, between people and their embedding situations with the environment (Suchman, 1987; Ingold, 2000). The chapter also highlights various widespread interpretations of local knowledge, which enables one to make sense of how the various definitions of knowledge are problematic to understand. Based on my ethnographic material from Kibtya, I argue that a simplistic definition of knowledge as an abstract or bounded system would lead to a mistaken conclusion, because it is complex and emergent in practice according to various forms of contexts and changing circumstances.

The main sections of this chapter describe farmers' seed knowledge in relation to interaction with one another at the family and societal level. The particular role of women and the

⁵¹ Chat often stimulates people when it is chewed.

procedure of involving children in various levels of farming life to teach them through observation, practice and repetition are also examined. From detailed accounts of discussion with Kibtya's farmers at different age levels (12–70) and both sexes, the chapter identified that almost all of them have acquired knowledge based on continuous engagement in experiential learning within the socio-cultural and natural environment in which they are living. This shows knowledge is acquired through people's lifelong engagement with each other and with their environment, as learners are involved in the process of thinking, perceiving and remembering in order to maintain and transfer the existing context-based practical knowledge. Being engaged with the aforementioned ethnographic accounts from Kibtya, one can see that knowledge should be understood as a flexible, practical and context-based phenomenon rather bounded and fixed in a certain place (such as schools) or within a particular group of people. Thus I draw on the idea of Bicker et al. (2004) and argue that knowledge is not 'for' or 'of' someone/things as it is often interpreted in the approach of Indigenous Knowledge; rather, it is enabling, in that those who hold this sort of knowledge make use of it in terms of how other knowledge systems are contextualized to fit into a particular situation.

This kind of experiential knowledge and context-based practical learning at various stages of life has a policy implication in terms of building a learning society in different fields of disciplines apart from agriculture. Formal institutions (such as schools) could create a nation of young, productive and innovative people and build a diversified economy. In order to do this, the school curricula should be re-designed in a more engaging manner to incorporate elements of experiential learning, which would inspire students to become involved in both knowledge systems. This would help them to be innovative in many aspects of urban and agricultural life if they do not succeed in the academic arena; or they would be interested to advance the relevant technologies, including agricultural ones, in the context where they continue their higher education. The idea of considering experiential knowledge in science and other fields of studies is not only to add more value to science, but also to gain effective and continuous use of such knowledge at no major cost (Sillitoe, 2007), as it is culturally and environmentally integrated. Such an approach is being tested in some African countries such as Kenya, Namibia, South Africa and Burkina Faso, where some cultural elements are incorporated into their school education curricula (Coe, 2005). Therefore, a paradigm shift

needs to take place in which the confined classroom teaching is integrated with practical exercises to help students to implement what they are taught in their real life.

Chapter 6: Perception and use of different forms of seeds in Kibtya

Introduction

This chapter focuses on the significance, perception and use of different forms of seeds in the context of smallholder agriculture. The chapter focuses on farmers' perspectives on different kinds of seeds grown in Kibtya, and situates these in relation to broader debates on the controversial use and development of High Yielding Varieties (HYVs) and Farmers' Seeds (FSs). Since the 1960s when the Green Revolution began, the debate on the use and management of seeds has been increasingly evolving in two broader perspectives. Broadly speaking, in the first perspective, producers are interested in increasing crop yields (per unit area rather than expansion of cultivated farmlands) through use of modern technologies including agro-chemicals, fertilizers and HYVs (Matson et al., 1997; Pinstруп-Andersen and Schioler, 2001; Fan et al., 2012). In the second perspective, environmentalists are interested in the long-term and sustainable use of crop genetic resources through use and enhancement of FSs (Binswanger and Pingali, 1989; Shiva and Krishnan, 1995; Johnston, 2012). Based on ethnographic material from Kibtya, the chapter transcends this opposition by showing that farmers recognize the positive aspects of HYVs, while also highlighting their limitations. This implies the need to have a contextual understanding of how HYVs are used alongside FSs and the chapter highlights the different meanings and values that are locally attached to both kinds of seed.

HYVs (sometimes known as modern seeds) are new breeds, often assisted by scientific methods and technologies in order to achieve yield increment through agricultural intensification on land already under cultivation (Matson et al., 1997). These varieties are often associated with fertilizers, pesticides and other chemicals to achieve the intended productivity. For this reason, HYVs are criticized for dependency on external inputs and vulnerability to environmental stress. FSs, on the other hand, are traditional seed diversities which farmers maintain through continuous selection and a complex process of evolution (Orlove and Brush, 1996). Their nature of mixed population and diversity are often appreciated in relation to adaptation to different agro-climatic zones, but are criticized for their lower productivity compared to HYVs.

While discussing arguments over the advantages of HYVs in terms of controlling disease and pests through combining genetics, molecular breeding and selection (Fedoroff et al., 2010; Spiertz, 2010), the chapter emphasizes the works of Shiva, (2000); Brush, (2004); Pound and Jonfa, (2005); from which I draw accounts of how a diverse range of FSs are able to adapt themselves to vulnerable climate conditions, where there is erratic rainfall, variation of moisture, frost and heat. The significance of seed diversity is to provide guarantee of productivity through spreading the risk of vulnerability to disease, environmental stress and pest across a range of agro-climatic conditions. Seed systems in these types of contexts are therefore characterized by key practices such as saving of different seed diversities and exchange among farmers through gift giving, swapping different varieties, ritual, prestige and cuisine (Brush, 2004; McGuire, 2008).

Kibtya farmers seem increasingly inclined towards HYVs owing to their traits of higher productivity but at the same time, most farmers are still interested to retain FSs, because they want to have security,⁵² independence of seed supply⁵³ as well as seed diversity for many social, cultural and ecological reasons. This implies both types of seed are not locally understood as objectively good or bad. Rather farmers' decisions whether or not to use a given seed depend on a complex range of factors, including particular socio-cultural, economic, ecological, as well as political contexts.

The first section of this chapter discusses the existing debate on HYVs and FSs. The subsequent sections explore farmers' varied perceptions of these seeds in the context of Kibtya. In the conclusion, I highlight considerable ambiguity and internal diversity in the attitudes expressed. I suggest that these point to the need for a contextual understanding of the various factors that affect the choices farmers make, and for policies and interventions that take these factors into account.

⁵² Farmers do not rely on HYVs because of high susceptibility to environmental stress.

⁵³ Most farmers are concerned about the increasing dependency of seed supply on government.

Debating Farmers' Seeds and High Yielding Varieties

Over time, humans have developed vast knowledge in identifying 'thousands of edible plant species, hundreds of crops, and hundreds of thousands of varieties of crop species' (Brush, 2004: 19). Pinstруп-Andersen and Schioler defined Farmers Seeds (FSs) as landraces which are domesticated through 'the tireless efforts of generation after generation of farmers paid off in strains of plants and animals' (2001: 8). For Brown, FSs are, 'geographically or ecologically distinctive populations which are conspicuously diverse in their genetic composition both between populations and within them' (1978: 145). According to Orlove and Brush, (1996), FSs refers to traditional seed varieties, which farmers maintain through continuous selection and a complex process of evolution. They are mixed populations of local varieties. They are often referred to as the world's most important genetic resources because of their direct linkage with the human food supply. FSs are associated with their infra-specific diversity (within rather than between species) and they are often rooted in highly heterogeneous environments in which 'traditional' farming systems are characterized by smallholder farms and ethnic minorities (Orlove and Brush, 1996).

High Yielding Varieties (HYVs), on the other hand, refers to developing plants with improved grain quality traits which 'are seed quality or output traits, alter the nutritional or functional properties of the harvested plant for use in foods, animal feeds, or industrial products' (Mazur et al., 1999: 372). HYVs are claimed to be effective in their particular traits of productivity so that they are significant means of food security in the context of increasing population throughout the world. Godfray et al. asserted that:

Continuing population and consumption growth will mean that the global demand for food will increase for at least another 40 years. Growing competition for land, water, and energy, in addition to the overexploitation of fisheries, will affect our ability to produce food. (2010: 812)

Supporters of HYVs also claim that such improved seeds would save further deforestation due to the spread of agriculture through achieving maximum production per unit area, rather than expansion of cultivated farmland (Pinstруп-Andersen and Schioler, 2001; Fedoroff et al., 2010; Godfray et al., 2010; Fan et al., 2012). Many producers advocate the value of modern agriculture

from the perspective of achieving food security through use of external inputs and agricultural bio-technologies (Fedoroff et al., 2010; Spiertz, 2010; Godfray et al., 2010; Fan et al., 2012). The emphasis is maximizing crop production per unit area rather than from increases in the cultivated area (Fan et al., 2012), because public goods such as land and water are scarce resources. Citing Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT), Pinstруп-Andersen reported that:

If no yield increase had taken place in developing countries since the 1960s, an additional 300–500 million hectares would have been needed ... [As a result], wildlife would have suffered, biodiversity would have been reduced, more forests would have been cut down, and land degradation would have been rampant. (2001: 20)

This idea of increasing productivity through intensification of agriculture and use of high external input is attributed to feeding the increasing world population (Godfray et al., 2010). Many proponents share such concerns and propose a number of possible solutions associated with technological innovations and creativities such as application of renewable energies and better use of natural resources, such as sunlight and seawater (Cleveland et al., 1994; Naylor et al., 2007). Spiertz (2010) argues that including the emerging biotechnology, bioenergy, bio-control of pests, and plant defence into the process of food production helps to solve the most severe problems such as drought, disease, pests, weeds, nutrients and the like.

Environmentalists contend that the ever increasing trend of modern agriculture seems to have as a priority the gaining of maximum economic returns through breeding of HYVs with high level of inputs which results in excessive consumption patterns (Pimentel et al., 1992; Evans, 1996). Shiva argues that for smallholder farmers in particular, seed is not only for current consumption and future food security but it also provides a guarantee of the reliable maintenance of culture and history so that it is ‘the first link in the food chain ... and the ultimate symbol of food security’ (2000: 8). Even so, ‘food security is not just grain in the godowns or stores, it is enough food for each person in every home’ (Shiva and Krishnan, 1995: 29). Further, others have argued that FSs are immense sources of the world’s crop genetic diversity so that they are fundamental in maintaining crops with stress-resisting ability to meet diverse needs of farmers in heterogeneous and changing environments (Shiva, 2000; Bellon, 2004). Others also support the

positive role of FSs in resisting disease, ensuring yield stability, fulfilling diverse needs and achieving dual functions of conservation and production in many parts of the world, including Africa, Asia and Latin America (Haugerud, 1988; Orlove and Brush, 1996; Asfaw, 2000).

To extend the aforementioned debate further, the existing opposition between producers and environmentalists lies in how the contemporary production system should bring about a solution to reliable food security in the context of a changing environment. Proponents of HYVs argue that the problem of food security can be solved by developing HYVs with special traits of coping with diseases, pests and other climatic challenges through use of agricultural biotechnology (Cleveland et al., 1994; Naylor et al., 2007; Spiertz, 2010). Further, Fedoroff et al. state that the conventional and molecular breeding as well as molecular genetic modification (GM) would help the existing food crops to adapt to climate change and continue to be productive in the context of an increasing temperature, decreasing water availability, salinity and flooding. They also described how combining genetics, molecular assisted selection, and modern breeding made it possible to control a disease that potentially could destroy half of the global production (2010).

This approach has already attracted some developing countries, where some have been criticizing efforts to stop development of external input-responsive crops including GM crops. Cyrus Ndiritu, director of Kenya's Institute for Agricultural Research (cited in Pinstруп-Andersen and Schioler), said that:

The on-going debate emerging especially from Europe about the real and perceived hazards of the bio-technology in Africa can be taken as being aimed at creating fear, mistrust, and general confusion to the public. (2001: 5).

Similarly, Hassan Adamu, the Nigerian Minister of Agriculture criticized that denying what agricultural biotechnologies have offered, which could relieve poor from hunger, and attempting to 'control their futures by presuming to know what is best for them is not only paternalistic but morally wrong' (Pinstруп-Andersen and Schioler, 2001: 5).

In contrast, opponents of HYVs criticize that sustainable productivity would be achieved in practice through FSs' diversity as they have evolved under a more flexible production system in different agro-climatic, social, cultural, economic and political conditions across the world (Orlove and Brush, 1996; Shiva, 2000; Bellon, 2004). The core of this argument is that though HYVs are more productive than FSs, their production system fosters mono cropping which results in genetically uniform varieties and this would bring about unintended results in the future. Johnston states that:

Monocultures for example, may be highly productive in particular ways over short periods but they are inherently vulnerable to unforeseen variability. Such variability, particularly in a climatic sense, is an increasing part of the contemporary world. (2012: xv)

The implication is that, for such artificial farming practices to fit into new technologies, they are embedded in an economic system that is fundamentally extractive as multinational seed corporations are motivated by profit rather than the public good, so that in Marxist sense these organizations extract surplus value from farmers.

Some agreed that introduction of HYVs would bring positive results in terms of additional features to the existing pool of crop diversity. In this regard, Bellon (2004) pointed out that introduction of 'foreign' germplasm can be a source of morphological and agronomic diversity as new seeds could bring a desired trait when combined with landraces. Evidently, Mexican farmers appreciated the result of hybridized crops which are composed of HYVs and FSs (Bellon and Risopoulos, 2001). The problem is that hybridization would pose the threat of extinction to FSs due to genetic erosion (Bellon and Risopoulos, 2001). Bellon explained this concern and said that 'for several decades concerns over the loss of crop genetic diversity has grown especially where a few genetically uniform, high-yielding varieties have replaced genetically variable crop landraces, a process known as crop genetic erosion' (2004: 159). Tracing the historical observation of plant collectors in South Africa, Brush also brings empirical examples of how introduced seeds caused extinction of local ones:

Botanists' observations in South Africa (1919) on the disappearance of Boer variety of oats caused by the introduction of an Algerian oat variety; Mediterranean cereal varieties replaced by American cultivars; threat to rice diversity and traditional management posed by the diffusion of modern, HYVs of the Green Revolution, etc. (2004: 202)

In Africa, most farmers are not responsive to technological transfer such as chemical fertilizers, irrigation and fertilizer-responsive seeds which are improved varieties or HYVs; rather, most farmers prefer stress-avoiding technologies and higher quality varieties (Binswanger and Pingali, 1989). For example, in Uganda, promotion of HYVs and use of chemical fertilizer (1919–1960) has failed in relation to land use (Byerlee et al., 2009). In West Africa, too, promotion of fertilizer-responsive cultivars from India also failed because 'the Indian varieties did not have the quality of resisting stress as local varieties do' (Binswanger and Pingali, 1989: 94). Such aforementioned and other related experiences therefore reveal that one has to be careful in the introduction of external inputs, because productivity may not be sustainable unless some organic supplements are also applied (Pound and Jonfa, 2005).

In this vein, some argue that crop diversity would add value to sustainable production systems and nourish organic matter, but the threat from modern agriculture has been increasingly mounting despite being an integral part of agriculture through which farmers have been responding to the changing climatic, social and economic conditions, technological alternatives and population pressure (Brush, 2004; Pound and Jonfa, 2005). Shiva (2000) also explained that for many centuries, Third World farmers provided a great deal of diversity of seeds and plants from which consumers are getting the nutrition they need. Evidence from India can serve as an example as Indian farmers alone have bred and maintained 200,000 varieties of rice (Shiva, 2000).

In the case of Ethiopia, there are four seeds systems in general which are composed of informal seed systems, community-based seed systems, formal (government-supported) seed systems and commercial seed systems (Abebe, 2010). Of these, informal seed systems (self-saved seed or farmer-to-farmer seed exchange) accounts for 80–90% of the seed used by smallholder farmers (Abebe, 2010: 4). However, the agricultural research policy of the Ethiopian government tends to favour and promote HYVs: 'the country's agricultural research system has developed and

released more than 664 varieties of 50 different crop types and the total area covered by improved seeds in 2009/10 cropping season was about 364,154 hectares' (Abebe, 2010: 14). In the same manner, local government in Kibtya is vigorously implementing high input agriculture to increase productivity mainly through use of external inputs such as fertilizer, pesticides and HYVs. This shows that HYVs are supported by governments with powerful interests that are not necessarily oriented towards the best outcome for farmers. For farmers the issue is not just the traits of specific types of seed per se, but the consequences that flow from this relating to the broader political economy that supports the distribution of seeds and inputs.

The following sections describe how these issues emerge in the ethnographic context of Kibtya. This demonstrates how Kibtya farmers are facing multidimensional challenges in terms of choosing between different types of seed. The subsequent sections also demonstrate the complex interpretation and valuation of seed in Kibtya with respect to meaning, benefits, and politics in the course of their social life.

Use of different types of seeds in Kibtya

Farmers often need different seed varieties to obtain varied traits such as agronomic maturity, food quality, stress- and disease-resisting ability as well as productivity. Hence, planting diverse seeds is an essential farming activity, particularly in the context of smallholder farming. Bellon and Risopoulos explain that Mexican smallholder farmers maintain maize varieties which 'combine a particular set of characteristics such as yield potential, maturity, performance under biotic and abiotic stress, storage properties' (2001: 801). The key strategy for a farmer to access the relevant variety of seed at any given part of the farming season would be seed exchange through the established social relation system because certain types of seeds which are saved by a household do not always satisfy diversified seed demand (Teshome et al., 1999; McGuire, 2008). Brush also pointed out that 'diversity is advantageous to farmers in several ways, but many farm households cannot maintain high levels of diversity so they rely on exchange or markets to provide diversity' (2004: 257).

In Kibtya's farming tradition, seed-saving practice is not only for consumption or having seeds for planting next season, but also it is related to satisfying diverse needs including preferred crops residue for animal feed and roofing for cottages, saving particular types of seed for cultural and spiritual activities, ensuring social position and prestige through saving as many diverse seeds as possible, etc. In practice, I observed that seed-saving practice (for planting next season) often relates to wealth as poor farmers may not have excess grain to store. Seed saving seems also related to gender and age in which women and the elderly are often responsible for saving seeds.

Women in particular are the ones who are engaged in seed-saving and -storing practices, so they develop knowledge associated with classification of seeds, storing characteristics of seeds, making of storing materials and the like (see details in Chapter 5). One informant reported that some farmers, particularly older ones (both men and women), are often interested in saving pure breeds of seed, which they share with others through exchange or sometimes as a gift (usually a small amount) so that they attain respect, initially from people who are sharing grain and gradually from larger groups or community members as they may share more seeds through social networks or kin groups. Sheck Nuru Molla (58), who is a well-off farmer and Muslim religious leader, explained that:

Seed is not something to be stored somewhere as a kind of tool or material. It is sacred and needs to be stored in a right place out of reach of rodents, weevils and irresponsible persons. Some farmers might hide their seeds even from their husbands or wives if they feel the stored seed would be used for other purpose ... Seed is life so that it needs to be shared in a certain manner. Those who saved and share their seeds are life providers so they are respected.

Sheck Nuru's explanation of 'seed as life' seems partly related to his religious views. Sheck Nuru Molla explained that 'barley is the first gift of God (Allah) to the first man-Adam' which implies (from Sheck Nuru's point of view) that seed symbolizes life, as God has given seed to Man to sustain his life. Further, Sheck Nuru Molla reveals that seed has its own power to give life because, unlike other plants, seeds/food crops are often associated with humans' well-being in the course of their material and spiritual life ways; therefore they would give life to people. This implies that farmers need to have reliable seed management and supply which can be

locally available at all times according to the changing agro-climatic conditions, because secure access to seed is the most significant priority for smallholder communities as it determines their agricultural performance in each farming year. In this regard, the traditional seed exchange system and social relations prove to be the main means of supply of seeds for the vast majority of smallholder farmers (McGuire, 2008; Sperling and Cooper, 2004).

When it comes to HYVs, there is a strong and rather complex relationship between government and the Kibtya community, particularly in terms of government-led introduction of new technologies including improved seeds (HYVs) and fertilizer. In the previous chapter, the challenge of adaptation of new technologies was explained to show the greater extent of tension related mainly to farmers' concerns over vulnerability and high cost of fertilizers and HYVs. Other concerns regarding HYVs are taste, cooking characteristics and animal feed. For example, most farmers reported that animals prefer FS hay as the straw is smooth and tastes good to them. Although there are short kinds of HYVs, as reported by Pinstrup-Andersen and Schioler (2001), the straws of most HYVs in Kibtya are strong and tall so that animals cannot eat particularly the bottom part. One farmer said: 'though modern seeds provide good yield, our cattle do not like to eat the straw'. A woman farmer supports this and explained, 'HYVs needs a lot of rain and if the amount of rain is less, and there is insufficient water, the leaves and stems of HYVs would be even harder, which animals cannot eat'. In most cases of HYVs, farmers cut only the upper part for feeding animals. They use the lower (thicker) part to make roofing for their cottages. Figure 6.1 shows a farmer uprooting the bottom (thicker) part of the introduced wheat straw (upper part with crops was cut off beforehand) for use in roofing his house.

Figure 6.1: Farmer uprooting wheat straw for roofing his cottage



Close view of wheat straw on farm (after its head is cut off)

One experienced and married woman (55), who is one of the well-respected and knowledgeable women among Kibtya community, explained that she prefers HYVs when it comes to productivity. Regarding cooking, she said, it depends on what type of food she wanted to prepare. In general, new varieties are good to make bread and FSs are good to make *injera*.⁵⁴ In practice, women are prioritizing use of either seed according to the type of food they need to prepare. For example, most wheat crops from HYVs are good for making bread, whereas FSs are good for making staple food known locally as *injera* (details of which type of crop is used to prepare what is summarized in Table 6.1).

The co-existence of different agricultural systems has been described in a number of other contexts. Brush explains the situation in Andean agriculture:

Centralization versus localized decision making is a tension that persists in contemporary Andean agriculture, where subsistence and commercial production coexist and the use of local and nonlocal production inputs are intermingled in most fields and villages. (Brush, 2004:81)

In similar vein, Kibtya farmers, particularly model farmers, are keen to embrace HYVs within their seed system but there are varied views in terms of deciding whether or not to replace one

⁵⁴ Staple food – soft bread.

type of crop by another. The implication is farmers seem to be flexible according to various contexts so that they would use their first choice of seed or alternative seed according to the specific condition. Individual or group-based decisions depend on how one would understand a particular seed in terms of use and meaning making from different perspectives. The following sections will draw on different forms of understandings and interpretations of HYVs and FSs in Kibtya.

Varied perceptions and interpretations of HYVs and FSs in Kibtya

Kibtya farmers recognize various positive and negative characteristics of HYVs and FSs. Although these understandings are broadly shared, reflections by informants reveal that there is no specific benchmark in terms of deciding which type of seed is better. Rather, the choice between HYVs and FSs seems to depend on the assessment of their different traits in relation to complex contextual considerations based on individual, social and environmental circumstances.

In Kibtya, the benefits of FSs are widely acknowledged. For example, one informant farmer explained that though it is not as productive when compared to the HYVs, *meke-wheat* (which is one of the FSs) has an overriding capacity to resist weeds so that farmers do not have to spend labour in weeding *meke-wheat*. It also has the capacity to tolerate moisture. *Meke-wheat* does not need fertilizer and can give yield without it so that farmers do not need to buy external input such as improved seed and fertilizer. The implication is that it is more affordable for poor farmers who have no capacity to buy external input such as fertilizer, pesticides and improved seed. Most farmers reiterate what the aforementioned farmer explained about *meke-wheat* and further explained that *meke-wheat* has existed in the local ecosystem for decades so that farmers are knowledgeable in terms of its selection, storing, seeding and harvesting. In other words, farmers know the characteristics of *meke-wheat* as to how, when and where it should be seeded. In this sense assessments as to which seeds are most appropriate to plant relate to a significant extent to the degree of knowledge that farmers have about how to cultivate these.

Attitudes to seeds are significantly related to age. Younger farmers, particularly those who are less than 30 years of age, tend to stress the negative elements of FSs. For example, one young

farmer (not married) who is living with his parents said he does not think he is missing any benefit from the lost *meke-wheat* because he believes that new seeds are more productive and they replace every benefit what would have been gained from the traditional *meke-wheat*. From my discussion with farmers of different ages, I learned that the interests of young and old farmers varied according to their respective situations related to age and lifestyle preferences. Older farmers' perception of the use of FSs is often associated with diverse benefits in terms of fulfilling different socio-cultural and ritual needs as well as quality animal feed and nutrition. On the other hand, younger farmers' perception of FSs seems related to productivity which is more important as they have less access to land than older farmers who have more land. Productivity for young farmers would also mean better possibility to establish a cash economy in which they could fulfil their additional needs (such as clothing, mobile phones, buying drinks and the like) other than consumption. Further, young farmers might have no ample knowledge about cultivation of FSs in terms of understanding what particular soil type and environment is needed to grow them, because this kind of knowledge needs long-term exposure and experience, so young farmers could not add value to FSs. The following sections describe more about the use and management of HYVs and FSs and examine meaning making associated with different categories of age and gender.

Contested views of Tradition and Modernity

In contemporary Kibtya farmers are often reluctant to publicly discuss their feelings about traditional beliefs and practices. Most traditional practices, particularly those related to spirituality such as *shonat* and *dem mafses*,⁵⁵ are seen as obsolete and backward. The meaning of backwardness for most farmers is related to practising traditional activities, failure to be involved in modern practices and institutions such as sending children to school and using fertilizer, new seeds and technologies. Mostly for young people, those who have tin-roofed houses, mobile phones and wrist watches are considered as modern. Back and forth visiting big towns and putting on a suit or stylish clothes, being able to read and write are also other criteria for someone to be considered modern (Ferguson, 1999). Most farmers, particularly youths, foreground their modern identity by showing that they have some of the aforementioned

⁵⁵ *Shonat* and *dem mafses* are kinds of ritual in which people feast through a range of food diversities, slaughter chickens, goats and sheep of different colours to get cured from their illness.

elements, or by demonstrating knowledge of other towns and places. Hence, young farmers often criticize traditional practices and rituals as backward activities that they are no longer interested in engaging with. Ethnographic material from Kibtya reveals that due to mobility and migration, young farmers are getting different insights and experiences, so they have been promoting a new lifestyle which is often dominated by modern culture. So the key point here seems to be that attitudes to seed are partly inflected by broader differences in the attitudes people have towards modernity and the benefits or problems that are associated with this broader set of social and cultural changes. The term ‘modernity’ normally means a period of time from which people look ‘back’ to another time that is gone. It is associated with certain ‘acceptable’ or aspired to aspects of life that are normalized in western societies, but there are anxieties and alienations that are also characteristic and not so clearly ‘acceptable’. Coe (2005) explained that ‘modernity’ has no clear-cut definition, and notes how as an ethnographic category the term is defined and understood by informants in a variety of ways. Further, modernity is composed of individualism, capitalism, and the nation state which are not always aligned to each other and as a result these social orders may end up fracturing modernity from within (Coe, 2005).

In Kibtya attitudes to modernity partly relate to generational differences. In the case of old farmers, they seem not concerned to become modern, and in many cases actively deride the changes they associate with increasing economic and social development. For example, most old informants explained that, in their youth, the value of cash was not dominant over grains. One’s wealth was valued by the amount of grains one stored, by the number of animals one bred, and by the size of land one owned. They argue that they still value wealth in kind rather than in cash, because material wealth such as land, animals and grains can easily be changed into cash whenever necessary, whereas the power of cash to buy materials is increasingly reduced. Young farmers’ view on such change is different and most of them argue that previously the context was different, so their parents used to make wealth in kind such as animals, land and related natural resources including seeds. The contemporary context does not allow them to have sufficient land and animals because land is scarce; breeding of animals is also difficult as it is associated with land and fodder. On the other hand, most old farmers explained that they are still interested in practising traditional activities, including rituals such as *shonat*, and *duaa*, though it is not a publicly accepted activity in the contemporary context. The changed pattern of preaching in

religions such as Christianity and Islam also contributes to lowering the confidence of old farmers to practise traditional prayer, which is often associated with rituals through use of seed diversity and some animals. Some informants explained that if they practise traditional ritual ceremony, their religious leaders would be angry and they may ostracize them from communal life ways.

Seed Diversity

The interest of Kibtya farmers (particularly old ones) in seed diversities is often associated with cultural practices such as *debo* (social gathering to harvest one's crops), *agmas* (social gathering to thresh one's crops), *kire* (social institution to host one's guests during mourning or wedding ceremonies) in which people get together and practise various activities (see detail in Chapter 7). Most old farmers believe that these cultural and ritual practices used to be performed to safeguard crops against natural calamity, to heal people and animals from illness. For example, *duaa* practice is believed to prevent crop disease, pests as well as human's diseases. My informants explained that *duaa* is a form of traditional institution in which individual persons, particularly old ones (mostly Muslims), gather to conduct prayer for a particular person or family in which the sick person could be healed from any kind of illness. *Duaa* prayer is also used to bless the harvest, to make rain, and to mitigate natural calamity such as drought, too much rain, or pandemic disease in humans and crops. Most well-off farmers in Kibtya (particularly in the past) used to host *duaa* prayer and related cultural or spiritual practices at least every two months because it is expensive for the poor to host groups of people frequently. However, there was no discrimination between rich and poor in the selection of participants for the prayers, because practising prayer is often associated with one's age, spiritual grace and ability to pray, not one's wealth or gender. In the contemporary context of livelihood, Kibtya farmers, particularly youths, seem not interested in such kinds of cultural practices as they believe this is backward so that cultural use of different seeds seems not to be a priority for young farmers. However, the idea of having seed diversity is generally accepted by most farmers though the rationale differs from person to person.

Most farmers complain that they do not have sufficient land to grow a diversity of FSs. Old farmers in particular are concerned about the increasing trend of losing their seed diversities. For

example, one informant (58), is practising some cultural practices (similar to other older farmers) such as *agmas* and *duaa*. He explained that such cultural practices give him confidence in terms of ensuring a good surplus for his production because he believes these practices are prayers to God so that his production will be protected from pests, weevils and diseases. This informant and many other old farmers said that they grew up observing and participating in such kinds of activity. In this vein, my informant said, he needs different kinds of seeds to maintain such cultural practices, but these days he often sows only one or two seed types on his piece of land because he has insufficient landholding to sow all the seed diversities he needs to save. In the year 2011, he sowed only barley and wheat crops, which make him sad as he would have sown other seeds such as bean, pea, lentils and others if he had sufficient land. He is concerned that if his barley or wheat seeds are threatened by disease or pest, he may not have any option as he has no alternative seeds on his farm which could have minimized production risk. Even if he is successful in his wheat and barley production, he still needs to buy legumes to make sauce, as people cannot consume *injera* or bread alone.

Losing seed diversity leaves Kibtya farmers thinking they are food insecure, because most of them believe seed diversity often avoids production risk as a particular kind of disease cannot threaten all seed varieties at the same time (Haugerud, 1988; Bellon, 2004). It seems growing different types of seed provides production security from the perspectives of resisting disease and environmental stress. This is evinced in many other parts of the country. Mulatu and Grando reported that:

Variation in disease incidence across the regions was most likely due to, among other factors, differences in varieties grown and farming system practices. In central Ethiopia, for instance, improved varieties were the most commonly cultivated, whereas in north and west Ethiopia farmers mainly grow local landraces, which might have a buffering effect and/or inherent resistance to the disease compared with the improved lines. Similarly, in north and west Ethiopia, farming systems are a mix of crops of different families (both BYDV⁵⁶ host and non-host). However, at the time of surveys, cereal mono cropping dominated farming systems in central Ethiopia (especially Arsi), which hosts the viruses. (2006: 301)

⁵⁶ Barley yellow dwarf virus.

A similar pattern is observed in Kibtya when it comes to disease resistance capacity between FSs and HYVs. Seed diversity for Kibtya farmers seems to have a further advantage in relation to meeting diverse needs. Some FSs are preferred for animal feeds over others; some are needed for cultural and spiritual practices, some for marketing and others for consumption so that the meaning of growing seed diversity is beyond the conventional understanding of productivity in narrowly economic terms of value. Hence, Kibtya farmers prefer to maintain as much diverse seed as possible through their locally integrated flexible farming system. Table 6.1 shows different types of seeds in Kibtya with respective sub-diversities and range of traits in which use of respective diversity may differ from one another.

Table 6.1: Common seeds identified in Kibtya

Local/ English name	Scientific names	Diversity of same seeds known by local names	Uses
Gebs/Barley	<i>Hordeum vulgare</i>	Sene-gebs, Ire-gebs, Werkiye-gebs, Nechita- gebs, Tikur-gebs	Though farmers often use a particular diversity of barley for a certain type of food or drink (to enjoy a better quality), it is generally used to brew local beer, make <i>injera</i> , ⁵⁷ <i>beso</i> ⁵⁸ and <i>kolo</i> . ⁵⁹ Barley straw is preferred to feed animals over wheat.
Sinde/Wheat	<i>Triticum turgidum</i>	Black-wheat, Meke, Anbete, Kuchbiye, Enat, Wusha tirs	Similar to that of barley, wheat diversity is used to prepare different kinds of food and drink including: <i>injera</i> , alcohol, snack, etc., but the most common use of wheat is bread. Wheat straw is not the first choice to feed animals.
Aja/Emmer-wheat	<i>Triticum diccocom</i>		Emmer-what is very common for bread and porridge. Most farmers reported that it has medicinal value for bone maintenance.
Bakela/Bean	<i>Vicia faba</i>	-Enat-bakela, Yewuha- bakela, Yeferenj-bakela	Most types of bean are used to prepare sauce which can be eaten mainly with <i>injera</i> . Bean can also be used to make <i>injera</i> by mixing with other grains such as wheat and barley. Most farmers also commonly use beans as supplement for main meal and as a snack (roast/boil), particularly during coffee ceremony.
Ater/Pea	<i>Pisum sativum</i>	-Agre-ater, Ater	Similar to that of barley, pea is commonly used to prepare sauce. It can also be used as a snack.
Teff/Teff ⁶⁰	<i>Eragrostis tef</i>	-Agay, Bursa, Seyit, Nech-teff, Tikur teff ⁶¹	Almost all types of <i>teff</i> are commonly use to prepare <i>injera</i> . It can also be used to prepare <i>genfo</i> , ⁶² <i>kita</i> ⁶³ and distilled spirit/alcohol in rare cases.
Shimbira/Chick-pea	<i>Cicer arietinum</i>		Chick-pea is not very popular in Kibtya but some farmers, particularly those who have access to irrigation, grow it. It is used to prepare sauce and snack. Mostly chick-pea is needed to prepare <i>kita</i> during rituals such as <i>shonat</i> or <i>dem-mafses</i> . It also has good market value.
Bekolo/Maize	<i>Zea mays</i>		Maize is usually grown in back yards for consumption while it is fresh (before being harvested). It can be mixed with other pulses and boiled to prepare snacks.
Misir/Lentil	<i>Lens culinaris</i>		Lentil is common in Kibtya particularly for generating income as it is often expensive in local markets. It can also be used to prepare sauce.
Telba/Linseed	<i>Linum usitatissim um</i>	-Netela-telba, Etif-telba	Linseed is also common in Kibtya but farmers often plant this crop in boundaries of farms or in the form of inter cropping. It is sometimes used as a supplement for sauce, as well as mashed with bread (while the bread is hot) to make <i>chibito</i> . ⁶⁴ <i>Chibito</i> is often served in cultural and ritual practices such as <i>agmas</i> , <i>shonat</i> and <i>duaa</i> , so it has good market value in local markets.
Nug/Niger-seed	<i>Guizotia abyssinica</i>		According to most of my respondents, niger-seed was introduced from lowland areas (approximately 25–35 years ago). It is not very common in Kibtya, but some farmers grow it as it has good market value and is used in cultural and ritual practices.

⁵⁷ Staple food in Kibtya and Ethiopia in general.

⁵⁸ Barley can be prepared either in the form of liquid or solid; *beso* flour can keep for a long time, so farmers often take it with them when they travel.

⁵⁹ Local name given for roasted grains mostly, barley, wheat, chickpea and sorghum.

⁶⁰ *Teff* is a staple food and there are many *teff* varieties in Kibtya such as *agay-teff*, *bursa-teff*, *seyite*, etc.

⁶¹ *Tikur-teff* is named interchangeably with *key-teff* and some are confused with *agay-teff* as well.

⁶² Special meal prepare with butter, particularly during maternity.

⁶³ A kind of flat bread which is thicker than *injera*.

⁶⁴ *Chibito* is a kind of food where hot bread and crushed linseed are mashed to make it.

As shown in the table, I observed that Kibtya farmers are often interested in having some amounts from every seed diversity for a range of uses such as wheat for bread, *injera*, snack or *kolo*; barley for local beer, snack, *beso*, *injera*; *teff* for *injera*, *kita*,⁶⁵ *genfo*⁶⁶; bean and pea for sauce and snack in the mornings or evenings; lentil and chick pea for sauce, ritual purposes, and for sale; linseed and niger seed mostly for ritual and cultural purposes. Such empirical data reveals how Kibtya farmers have been using local seeds for a range of purposes including for non-material uses (see details in Chapter 7). This trend of retaining seed diversity seems positively valued by most informants and one of them explained that farmers have learned a lesson about the significance of seed diversity, particularly when they see that HYVs of wheat were threatened by the yellow fungus. One informant said that:

I would say that we lost our indigenous seeds just because of carelessness. We were overwhelmed by the productivity of new varieties and we failed to see other aspects. Now we have learned that we should not lose our varieties. For example, when modern variety of wheat is being threatened by disease, those of us who are depending only on such modern variety, we lose wheat production. On the other hand, those farmers who keep their indigenous wheat variety, such as black wheat (*tikur sinde*) saved their wheat seed and got production for consumption, because the disease does not affect black wheat. Hence, I am currently looking for traditional seeds including that of *meke-wheat* and black wheat so that I will seed it and reproduce in my farm. In future, I will definitely have some portion of traditional varieties in my farm so that I won't lose both traditional and new varieties. In this case, I will have security if one variety of seeded grain fails.

Other farmers also seem to have intrinsic relationships with FSs which is revealed through their explanations and day-to-day activities. Most informants described that when HYVs were introduced, there were many technical and market-driven innovations for farmers including demonstrating the positive effects of HYVs in terms of productivity (Ethiopian Agricultural Transformation Agency, 2010). However, there are ranges of challenges when it comes to replicating what was demonstrated in Farmer Training Centres in farmers' fields. One farmer said that the continuous promotion and follow-up from government made farmers lean towards HYVs and they found these new seeds to be productive, but only if general conditions (such as rainfall, application of fertilizer and use of appropriate seed) were favourable. Other farmers argue that in most cases all the aforementioned conditions cannot be fulfilled at the same time, so HYVs are often vulnerable to a range of environmental

⁶⁵ Soft bread prepared from teff – usually goes with yogurt, milk and butter.

⁶⁶ A special meal particularly for women in maternity.

stresses, diseases and pests. DAs often advise farmers to plough at least two or three times before sowing any type of HYVs; farmers are also advised to weed as many times as possible. As we were discussing, one farmer said that he personally regrets why farmers simply lost *meke-wheat* without properly caring for it as they do for HYVs (such as intensive weeding and use of fertilizer). He thinks that if farmers had used fertilizer when sowing *meke-wheat*, weeded it properly and paid every attention as they are doing for new varieties, it would have provided a better yield. Most farmers explained that they used to plough only once or twice for their traditional seeds such as bean, pea, barley and wheat. Weeding was not a culture of traditional farming for most FSs except for *teff*. One farmer (70) remembers that he used to seed *enat-wheat* (which is another type of FS) year after year without break and the same seed without diminishing its productivity. He also said that *meke-wheat* had a capacity to resist diseases such as the so-called white fungus/*wag* so that he tends to reclaim it. Similar trends of reclaiming FSs were revealed in Navdanya project in India in which some farmers have returned to cultivation of farmers' seed diversity after being shifted away from traditional agriculture and suffering the consequences (Shiva and Krishnan, 1995: 10).

Some model farmers and youths (to some extent) argue that the problems of HYVs such as vulnerability to pests and pathogens should not be overemphasized as they can be mitigated by chemicals and other techniques such as innovative activities and improvements of seed quality through further research activities by government/external actors, but most farmers of different wealth statuses do not support this argument. Poor farmers complain that even if they were able to buy agrochemicals to destroy the yellow fungus, they could not afford to pay the government's prices for HYVs and chemical fertilizers. Better off farmers still complained about additional costs incurred because of disease. Such complex sets of interactions and differentiated ideas among farmers, as well as between farmers and DAs, reveal the challenging situation in terms of farmers' decision making between the aforementioned types of seeds. In Kibtya, farmers' decision making on a particular seed is partly associated with prediction in terms of which seed is to be planted where and under what weather conditions, because they are familiar about the characteristics of each FS and their respective diversity. Such tradition and knowledge system seems interrupted by the introduction of HYVs, as farmers are unable to tell the actual characteristics of new seeds owing to the fact that government is supplying new varieties every year. In contrast to FSs, it

is thus difficult to accumulate local or personal knowledge about HYVs, making farmers perpetually dependent on external sources of information.

HYVs and politics

As observed in many parts of the world including Asia and Africa (Shiva and Krishnan, 1995; Brush, 2004), productivity seems to be the priority of most governments, so they promote HYVs so as to ensure food security. As a result, the application of modern agriculture by governments and advocate researchers tends to favour political interests as it tends towards increasing yield rather than other forms of value. In the context of Kibtya, some features of traditional agriculture such as a decentralized, flexible and local-based decision-making system is increasingly changing into a more centralized and government or external actor-based, political system. Under the complex relationship between local government and farmers, Development Agents (DAs) often draw significant attention achieving high usage of external inputs such as fertilizers, pesticides, and HYVs, so that the performance of the Mekdella wereda would be recognized as a better or best district for the given year. In a number of informal and focus group discussions, participant observations, and semi-structured interviews, I gathered that supply of external inputs is highly politicized as each DA needs to fulfil a certain quota (each year) in order to achieve maximum efficiency in his/her personal file. In other words, each DA is supposed to deliver as much external input as possible in order to fill his/her assigned quota so that he/she will be promoted in terms of salary or position. For this reason, one can assume that DAs are going to be more interested in delivering fertilizers than analysing the effects according to various contexts.

In normal circumstances, use of fertilizer is associated with a number of preconditions, one of which is related to the amount of fertilizer proportionate to the size of a given piece of land (Gete et al., 2010). In other words, before spreading fertilizer, one should make sure whether the correct amount of fertilizer appropriate for the land has been supplied.⁶⁷ Another precondition is that use of fertilizer should go with pre-identification of each soil type (before application). In Kibtya, no significant farm-level soil identification activity has been carried out in relation to application of fertilizer. According to data from the agriculture development office of Mekdella wereda, the general soil type in Kibtya consists of diverse characteristics in which each soil type is different in terms of fertility, moisture and mineral content. The soil

⁶⁷ Agricultural experts in Kibtya explained that the proportional input for one hectare is one quintal of fertilizer.

type in Kibtya is categorized as 45% of vertisol, 40% of slightly loam and 15% of clay loam. In my discussion with agricultural experts of Mekdella wereda, they indicated that some types of soils in Kibtya are dominated by phosphorus, while other types hold more potassium, nitrogen and other minerals. This implies each soil type needs the right type of fertilizer and commensurate to a given size of land.⁶⁸ In practice, supply of appropriate type of fertilizer both by quality and by quantity is not applied. Despite the aforementioned challenges, DAs employ the greater part of their campaign every year to provide as large an amount of external input as possible to further their own careers because this is the determining factor for their career advancement. Hence one can suggest that one of the reasons (among many) for farmers to resist the introduction of HYVs could be related to lack of proper supply of HYVs with the right type of inputs commensurate to the appropriate soil type and size of land. Another reason could be related to farmers' interest to retain their seed diversities in a more flexible and independent manner.

Some Kibtya farmers reported that although HYVs are more productive than FSs, farmers cannot adapt and localize a particular variety of HYV because the government supplies new seed each year to optimize productivity. This situation saddened farmers (mostly old ones) as they feel that they no longer have control over their seed. In a focus group discussion with Mekdella wereda agricultural experts, all participant experts confirmed the pattern of seed supply in which government is trying to improve seed quality (through agricultural research institutes) based on feedback from farmers' fields each year. Alemu et al. explain the situation in Ethiopia and stated that in order to maintain regular seed supply from government, 'Regional Bureaus of Agriculture and Rural Development (BoARD) develop annual seed demand statistics with input from weredas (district) about their seed needs' (2010: 12). However, I observed that the so-called 'feedback' might be an input for government but it is a drawback for farmers. In 2011, for example, HYVs were badly threatened by yellow fungus or locally known as *bicha wag* and this was communicated to higher authorities as a 'feedback'. Based on such feedback, government would bring a type of seed for next season which could be resistant to yellow fungus, but most farmers are no longer sure whether they can trust HYVs.

⁶⁸ Equivalent to district.

Such dependency for HYV seed on external agents should not be encouraged as it is also not welcomed by farmers, because this would only favour seed companies or other institutions who often promote the advantages of improved seeds or HYVs through research and development (R&D) programmes. In an assessment of seven European countries, Kvakkestad (2009) reported that research outputs may be influenced by certain motivations based on the interests of their host institutions. This situation would have an implication whereby development of improved seeds could leave millions of farmers around the world under the control of a few seed companies. Kvakkestad further explains that ‘although hybrids are likely to increase yields, they could affect food security negatively since farmers are dependent on buying new seeds if the quality and level of the yield are to be maintained’ (2009: 2694).

In sum, use and management of HYVs and FSs are highly contested and farmers’ decisions tend to be made according to a particular context and preferences of individuals or groups. Most farmers emphasize the limitations of HYVs in terms of susceptibility to environmental stress and expensive costs, but at the same time, Kibtya farmers are attracted by the productivity of HYVs. The mixed views and debates of farmers in terms of decision making on the use of HYVs vs FSs is more complicated as it is also intertwined with socio-cultural, environmental and political issues.

Reconsidering the seed debate from the perspective of Kibtya

Debates about HYVs have often been polarized, with commentators focusing respectively on their problems and possibilities, often from normative perspectives. In contrast, building on the work of other anthropologists, I have demonstrated the complex ways in which farmers use and understand HYVs in relation to FSs and the different factors that account for the choices they make. My ethnographic account in Kibtya reveals that farmers are interested in gaining any advantage from both types of seed depending on their perception of how different groups of people understand the problems and possibilities of FSs and HYVs in a particular context. In the following paragraphs, I will reiterate what was explained in the previous sections and examine how farmers’ choices are determined by various contextual factors.

In the course of my ethnographic fieldwork, I realized that the local meaning of productivity is more than what is perceived as ‘yield increment’. Other factors such as social and cultural factors, security or long-term use related to land have significant influence in terms of understanding a given seed’s productivity. This reveals that the underlying principle of self-sufficiency of food in the context of smallholder farmers is not only about consumption and the physical net production but also about socio-cultural, spiritual and ecological situations in which diverse needs of farmers need to be satisfied through seed diversity (Shiva, 2000; Bellon, 2004). Apart from consumption needs for humans, farmers also need to have by-products such as straw from their crops for their animals so that those crops with good mass of straw are considered as productive in the view of smallholder farmers (Shiva, 2000). Some characteristics of crops such as short maturation periods, productivity, suitability for intercropping, particular taste (both for animals and humans) or cooking characteristics (Haugerud and Collinson, 1991) are the main criteria for farmers’ preference and seed selection processes.

In the case of Kibtya, for example, some of the criteria for selecting seeds for Ato Tadesse Fantaye are suitability of a crop’s residue for animal feed, capacity of growing in black soil and productivity. Farmers’ preferences for a particular seed will differ even between FSs. Ato Tadesse Fantaye explained that though hay from traditional *agay-teff* (this is an FS) is good for animal feed, he abandoned growing it because its productivity is low and it cannot grow well in black soil. Instead, he discovered that *bursa-teff*⁶⁹ is much better in terms of productivity and growing capacity in black soil. Many other informants also confirmed that productivity for them includes their animals, the environment, social and cultural contexts.

Kibtya farmers see productivity in its total value in which they may maximize the intended benefit so that the total productivity contributes to their self-sufficiency in food. Self-sufficiency in food does not mean creating an excessive consumption pattern (Pimentel et al., 1992), but rather, it is to have enough food in every house (Shiva and Krishnan, 1995). Taking the argument further, the aforementioned total productivity, advantages vs disadvantages of both HYVs and FS should be evaluated in terms of their total production value rather than only a single dimension which may lead to a mistaken conclusion. Crook asserted that ‘It is an unfair strategy to pick out a single component from an extensive chain

⁶⁹ Ato Tadesse Fantay mentioned that *bursa-teff* was introduced when he was a child (now he is 70) but *agay-teff* is the ancient one and inherited from ancestors.

of components and imagine it capable of standing independently alone' (2000: 8). The importance of considering total productivity as revealed in the case of Kibtya is also supported by Shiva as she states:

it is often said that the so-called miracle varieties of the Green Revolution in modern industrial agriculture prevented famine because they had higher yields. However, these higher yields disappear in the context of total yields of crops on farms. Green Revolution varieties produced more grain by diverting production away from straw. This 'partitioning' was achieved through dwarfing the plants, which also enabled them to withstand high doses of chemical fertilizer. However, less straw means less fodder for cattle and less organic matter for the soil to feed the millions of soil organisms that make and rejuvenate soil. (2000: 12)

Hence one can see that growing seed diversity implies accessing alternative seeds to ensure sustainable production in the context of a fragile environment and diverse geographical contexts. Growing seed diversity also implies securing nutritious animal feed to ensure animal husbandry, which is an integral part of smallholder agriculture. However, the trend is that agricultural biotechnologies and pressure of fostering external inputs such as fertilizers, pesticides and improved seeds are increasingly substituting natural, inexpensive and organic agriculture. I argue that the more this trend is growing, the more dependency on external actors such as private seed companies is likely to prevail as all forms of external inputs including seeds are produced from outside local contexts. This trend is seen as a serious concern for Africa because there is a greater extent of 'mistrust of multinationals, which are often seen as being manipulative and unscrupulous' (Kisamba-Mugerwa, 2005: 278).

To sum up, the ethnographic material presented in this chapter reveals that the views of farmers towards HYVs and FSs are mixed and there is no general consensus on which seed benefits more than others and what decisions are to be made. There are obvious advantages and drawbacks if one needs to have exclusive use of HYVs or FSs. HYVs are good in terms of productivity but they are vulnerable to pests and diseases, so they need to be supported by external inputs such as fertilizer, pesticides, agrochemicals and appropriate technologies. Such external inputs and chemicals are too expensive for farmers to afford to buy on a regular basis. My account shows that growing HYVs needs intensive farming and weeding, in which more labour is needed to plough and weed (at least two to three times) before harvesting. When it comes to FSs, less productivity is the main limitation of most types of FSs. Some FSs have also problems associated with fast maturity and production of sufficient mass of

straw for animal feed. On the other hand, most Kibtya farmers agreed that FSs do not need much labour for ploughing and weeding. Farmers also do not have to spend their money on external inputs such as fertilizer. Further, the taste of HYVs is not much appreciated compared to FSs. Even animals prefer hay/straw from FSs than HYVs, because leaves and stems of most HYVs are thicker which animals often dislike eating.

Despite the aforementioned drawbacks of HYVs, the general trend is that farmers' choice on increasing productivity seems to weigh more heavily than other criteria, particularly among poor and medium level farmers in Kibtya, but most farmers are concerned about the high cost of external inputs such as fertilizer and pesticide associated with HYVs. The implication is Kibtya farmers are interested in enjoying the productivity of HYVs in the context where costs for external inputs are manageable, and problems associated with susceptibility to disease are addressed. At the same time, they are interested in maintaining FSs as production security in the context where HYVs fail (for many reasons), or in the context where cost of external input is unaffordable. Such a complex set of contexts reveals the greater extent of ambiguity in terms of choice between productivity and stability (through seed diversity) which appears to be the main challenge for Kibtya farmers. Most Kibtya farmers are in a dilemma of choosing between HYVs and FSs as they found it difficult to hold both types of seeds mainly because of limited landholding. Another challenge is the inability of adapting or localizing HYVs because of susceptibility to environmental stress and unreliable patterns of seed supply from the government. In sum, farmers' attitudes towards use and management of HYVs and FSs is found to be differentiated owing to varied interests between old and young, poor and rich, male and female as well as one's opposition to or support for political influence of the development approach.

Conclusion

The entire discussion and examination of ethnographic accounts in this chapter reveals that in the context of smallholder agriculture, any type of seed is used differently according to a particular situation and perception associated to its socio-cultural and economic benefits. Understanding of HYVs in Kibtya is often associated with high productivity, but farmers have to purchase external inputs and pay government fees through marketing. Hence, most farmers, particularly old ones, perceived HYVs narrowly in economic terms, as commodities with exchange and resale value. Despite concerns about vulnerability and high cost, most

Kibtya farmers are keen to grow HYVs to increase productivity while keeping FSs for other needs. This results in tension and negotiation between both types of seeds in order to accommodate economic as well as socio-cultural needs of Kibtya's farmers under various contexts. When it comes to FSs, their role seems central to operationalize local institutions through supplementing appropriate seed diversities to various forms of feasts, cultural and ritual practices. This implies farmers are interested in maintaining FSs not only for consumption but also for fulfilling material and non-material needs.

Being engaged with the entire discussion in terms of how life works in rural areas, one would understand how Kibtya farmers are dealing with multifaceted and overarching issues with respect to FSs, HYVs and associated technologies according to various contexts rather than making a distinction between both types of seed. In other words, acceptance of HYVs and application of agricultural technologies depends on many factors and contexts such as to what extent the introduced seed fulfils the diverse needs of farmers, rather than only productivity.

Ethnographic accounts from Kibtya and beyond show that different types of seed are sources of genetic diversity and smallholder farmers are capable of growing seed diversity in various agro-ecological zones with the changing environment. Hence, seed diversity is proved to be significant in relation to fulfilling the socio-cultural, economic and environmental needs of smallholder farmers. However, seed use and management is increasingly politicized so that most governments are favouring HYVs rather than FSs because introduction of modern seeds and use of fertilizers is one of the government strategies to enhance productivity while ensuring political control to make rural populations more amenable. Environmentalists are increasingly concerned about the widespread trend of ignorance of socio-cultural and environmental aspects of seed conservation. Unlike India and other parts of South East Asia, intensive research on the multi-faceted dimensions of productivity is scant. Though evidence reveals smallholder farmers are interested in maintaining local seed diversity for many reasons, most research institutions in Africa are often promoting productivity through high levels of external input and agricultural bio-technologies in which socio-cultural and environmental aspects of farmers' interest is often overlooked. This shows that farmers' interests in their seed diversity is underestimated by the development agenda in order to make a political statement of independence and self-reliance (Shiva and Krishnan, 1995), which is mainly used for political consumption. From the multitude of data and experience from my

ethnographic fieldwork, I argue that the government's development agenda and farmers' context-based interests are incompatible. Government wants to increase productivity, whereas farmers want to increase security, and attach importance to a wider range of social benefits they associate with FSs.

The issue with productivity associated with HYVs is simply one of choice between different seeds as they are part of a bigger political economy. Hence, I argue that it is difficult to conclude one type of seed is exclusively good or bad, as farmers' decisions will depend on various factors in varied contexts such as economic, socio-cultural, agro-climatic as well as political conditions. This shows that both types of seeds (HYVs and FSs) can be used to achieve the aforementioned needs of farmers so long as the appropriate development plan is established and context-based intervention is implemented. The implication is, rather than understand HYVs and FSs as mutually exclusive alternatives, farmers need to integrate these into their lives in different ways. Decisions about how to strike the balance between these, and when to plant which, is taken in the context of a range of considerations, including the relative importance of access to cash (through increased production and marketing), the significance of retaining diversity as a way of offsetting risk of failure, and the different uses that FSs can be given in the context of different people's lives.

Chapter 7: The interplay of seeds, social life, and institutions

Introduction

Building on the analysis of the previous chapter, this chapter focuses on the ways in which seeds are integrated into the socio-cultural and environmental life of Kibtya. From this perspective I explore how the social importance and significance of seeds is locally elaborated. The chapter examines these issues through the lens of the practices and understandings of farmers in Kibtya and situates these in relation to a wider body of literature on seed.

The chapter builds on the work of Ingold (2000) and his concept of ‘taskscape’. Through this he highlights how people are drawn together in social relations through the tasks they perform; these tasks are simultaneously and inextricably physical and social. The chapter draws on this conceptual analysis in relation to practices and perspectives in Kibtya relating to the valuation of seeds in the course of farmers’ interaction with each other (mainly through institutions), with plants, animals and other natural beings (McGuire, 2008). Further, the chapter draws on the point of Ingold (1995) that an analytic opposition between nature and culture precludes understanding the way in which tasks involved in farming constitute relations that are indissolubly natural and cultural. Institutionalized team working and socialization is the basic system of making life so that local institutions such as *debo*, *agmas*, wedding (*serg*), mourning and so forth play a vital role. Such institutions are means of social relations and communications in which farmers get together to help one another on a range of occasions such as crop harvesting, threshing, weddings and mourning (see details in the subsequent sections). As Eriksen (2001) explained, the functionality of these institutions is significant in terms of maintaining the existing social relations so that understanding in terms of how these institutions operate would help in getting to know how group work brings people together in particular ways.

The first section of this chapter discusses the challenge of smallholder productivity and farmers’ attempt to supplement the production gap through growing market-oriented seeds and non-farm activities such as small-scale trading, and moving to other places (migration) to generate income. This section shows how socio-cultural and economic changes influence the existing seed management and accomplishment of tasks in the course of farmers’ negotiation

with internal and external factors. The next section draws on accounts of organization (such as distribution of jobs and different tasks) and the role of the household institution in sustaining subsistence farming in which smallholder farmers maintain rational resource management including seeds. This is followed by subsequent sections on the intrinsic relationship between various forms of tasks, institutions and seed management. Before the conclusion, the chapter discusses and examines the emergence of new institutions and their impact on social life and farming practices. The concluding section summarizes the main findings and discusses their wider significance.

Non-farm activities and their impact on socio-cultural change and seed management in Kibtya

Local people's behaviour and perception about different forms of livelihood and resource management are increasingly shaped and reshaped as individual actors are exposed to various contexts through government extension programmes, school education, migration and so forth. In practice, smallholder farmers are facing the problem of producing sufficient grains for many reasons including scarcity and fragmentation of farmlands, erratic rainfall and degradation of soil nutrients. This means they have to supplement their subsistence life and generate additional income through growing market-oriented seeds as well as through off-farm activities. Ruben (2005) state that, in the context of less favoured areas (LFAs), farmers generate income through ownership of assets (such as oxen), non-farm activities, and access to irrigation (to some extent). In case studies from West and East African countries, expansion of urban centres has been regarded as a good market opportunity for agricultural products (Peacock et al., 2004), so that farmers are encouraged in growing market-oriented crops. In Wolayta, the southern part of Ethiopia, farmers are more reliant on off-farming activities such as sending children to school, aiming at the long-term effect of reducing population pressure on land. Other strategies of supplementing farming life for families include sharecropping, share breeding and use of early maturing crops (Pound and Jonfa, 2005). Sharp et al. also explained that in Amhara region, rural households 'survive through combining farming with off-farm income earning activities in the dry season as they may lack the minimum agricultural inputs (land, draught power, labour)' (2003: 12).

Similarly, some Kibtya farmers who have access to irrigation are growing some types of crops such as *misir* (lentil), *abish* (fenugreek), onion, cabbage and other vegetables to sell at

Masha town for better prices. Other farmers are using the opportunity of the development of Masha town to diversify their income through off-farm activities such as small-scale trading and growing of eucalyptus trees for sale. Animals are also good means of generating income (Belete et al., 1991), where farmers would fill any gaps which may be created due to scarcity of food crops for consumption, government debts (e.g. fertilizer, modern seeds and government tax), school fees and buying small goods.

Another means of diversifying income is selling labour in remote places through migration and mobility. Mainly due to recurrent drought, lack of farmland and difficult living conditions, quite a number of Kibtya farmers, particularly youth, are migrating between Kibtya and other places in the country. Some of them are hired to work on someone's land or make contracts (in the form of sharecropping) with landlords to harvest agricultural crops, coffee or oil seeds; others may go to small towns and seek some labour work on construction sites; some may go to the southern part of the country where there is forest, so they can make and sell charcoal. According to Sharp et al., the survey in South Wollo zone (which Kibtya is situated within), North Wollo zone and Wag Himra of Amhara region (all these were formerly known as Wollo province), reveals that 'one in four households stated that one or more of their members migrate during the dry season in search of work, mostly to other rural areas within the Zone, and a few to town' (2003: 134).

In my discussion with some of the returnees in Kibtya, I gathered that all of them had a challenging situation in many respects ranging from very hot weather (e.g. Metema⁷⁰), malaria threats, and breaching of contracts by landlords. Women, particularly girls, often go to Arab countries to earn some money, mostly serving as housemaids. I observed that despite the aforementioned challenges and problems in their respective places of migration, most returnees still shuttle back and forth between Kibtya and somewhere else. A few of them (returnees) are married and start some business such as small-scale trade or open a shop (in Masha town⁷¹), or get a contract with farmers to work on pieces of land (sharecropping) under the existing tradition. Others may not return as they might achieve better economic gain where they are. However, most migrants tend to return once they have some money in

⁷⁰ Metema is one of the hot areas in the country located in the western part of the country near the border with Sudan.

⁷¹ The nearby town to Kibtya (about 6–7 km).

hand, so the purpose of migration seems to be to gain income and support subsistence farming through off-farm activities (such as small-scale trading) or through renting more land to maximize productivity.

This trend reveals that the lifestyle of the Kibtya community is changing, which brings change to the existing social relations and approach to agricultural productivity as young people in particular are increasingly involved in a range of activities including migration and other means of income generation to supplement their subsistence. The impact of such changes in turn is affecting farmers' holistic livelihood in terms of decision making in many aspects of life, including seed management. In other words, Kibtya farmers are negotiating between subsistence and cash economy in which cash is mainly needed to fill the gap in agricultural productivity, to pay debts from fertilizers and other inputs as well as government taxes, rather than accumulation of capital. This implies that the increasing need for cash is complemented by growing HYVs (among other cases) because these seeds often need external inputs for which farmers have to pay what they owe to the government. In relation to this, one can see the trend of traditional seed management (where seeds used to be exchanged and accessed locally) is being replaced by a new seed management system due to the aforementioned factors.

Most Kibtya farmers explained that they no longer carry out farming activities as they used to because the precipitation is no longer reliable in terms of availability, volume and distribution. Some argue that the seeding season and farming calendar should be tailored according to the changed pattern of precipitation. Hence, they are trying to adapt a new farming calendar with improved seeds and new technology. During the process, there is a great extent of interaction between farmers and external agents in which attitudes and behaviour of farmers are increasingly changing so that the existing pattern of resource management and social relations is being modified according to the emerging situation. Long asserted that:

All forms of external intervention necessarily enter the existing life-worlds of the individuals and social groups affected, and in this way are mediated and transformed by these same actors and structures. Also to the extent that large-scale and 'remote' social forces do alter the life-chances and behaviour of individuals, they can only do so through shaping, directly or indirectly, the everyday life experiences and perceptions of the individuals concerned. (1990: 6)

The overall impact of all these changes in seed management cannot be overemphasized, particularly in changing the attitudes of young farmers to traditional seed management. Due to their exposure to a range of contexts through migration/mobility and schooling, young farmers are increasingly interested in making cash to meet their diverse needs commensurate with their age, such as a growing interest in fashion clothing, visiting towns and buying drinks, buying electronics, mobile phones, and so forth. The implication is that young farmers seem to need to have a kind of productivity which can yield cash rather than having just grains of different diversity, which is not appreciated for marketing.

While access to the cash economy is therefore important, and increasingly so, farmers in Kibtya continue to recognise non-monetary significance to seed. When it comes to the existing seed management in Kibtya, social institutions are playing a vital role in bringing people together to perform certain tasks, creating space for negotiation and sharing experiences. These institutions, such as ‘the household’, ‘council of elders’, *agmas*, *debo*, *serg*, as well as different kinds of mourning institutions such as *ye-elet-lekso*, *merdo* and *ye-ketero-leso*, have different roles in terms of ensuring continuity of agricultural production through maintenance of various forms of seeds and social life. Farmers Seeds (FSs) have central role in providing economic and non-material benefits and supplementing appropriate diversities needed by different institutions to achieve their respective goals. This implies an intrinsic relationship between institutions, social life and seed management. The subsequent sections examine through the narratives of farmers how institutions and social life are significant for maintenance of seed diversities, while use of seeds are useful to run such institutions by bringing people together in order to accomplish different tasks. In other words, the emphasis of the following sections is describing how different types of social needs via institutions bring people together, perform a given task, socialize and maintain farmers’ kin relations; and how this situation in turn contributes to management of seeds in the course of farming life.

Rural household as an institution in subsistence farming economy

In Kibtya, household decisions on socio-cultural and economic issues such as marriage or mourning, farming practices and so forth are influenced by other groups in the community or kinsmen and women outside of the household. Sometimes the kin group could decide on behalf of the house head by influencing other members of the household when there are

difficult circumstances. For example, one of my informants reported how his first daughter got married without his involvement while he was in prison. This person was a party member of the previous Marxist military regime. When the current government took over political power, he was detained for couple of years. The person told me that while he was in jail, his relatives and neighbours influenced his wife and arranged for his daughter to be married, so that when he returned home he found his daughter had got married. I asked him about his feelings and he said:

arranged marriage is our culture so that my family and relatives have a right to represent me in my absence. Even if I was physically available, decision on this kind of issues would have not been made exclusively by me or my wife. It could, rather be made after lots of consultation with relatives, neighbours and old people in the community. Sometimes my wife and I could be influenced to make decisions which we might not be happy with.

The same approach would work on farming activities as any decisions made at the household level depends on a range of interactions and communication within and outside of a given house. While decision making therefore takes place in the context of wider kin relations, the household is an important form of institution in the context of farming livelihood because it is the basic unit of decision making in terms of resource management in which the patterns of production, reproduction and consumption are determined (Pound and Jonfa, 2005). Eriksen (2001) explained that the household is the point of interaction and relationship amongst actors in different categories. In Kibtya, the major categories within the household are the house head (husband), the mother, children, grandparents (rarely) and in some cases sheep herder (a boy or a girl). Sheep herders could have blood relationship with the house head (husband or wife) or they could be non-relatives. In both cases sheep herders would be contracted in a household to rear animals where they will be paid for their service (often on a yearly basis). Sheep herders are usually contracted in situations where the household has no child at all or the children have left the family due to marriage, education, migration and so forth.

Figure 7.1 shows the interconnectedness of farming life in Kibtya in which some features of a given village, such as cottages (for humans, animals and cooking), animals, couple of haystacks, crop-threshing site and a shade for cow dung (for firewood), are drawn to give the general sense of a typical homestead in Kibtya.

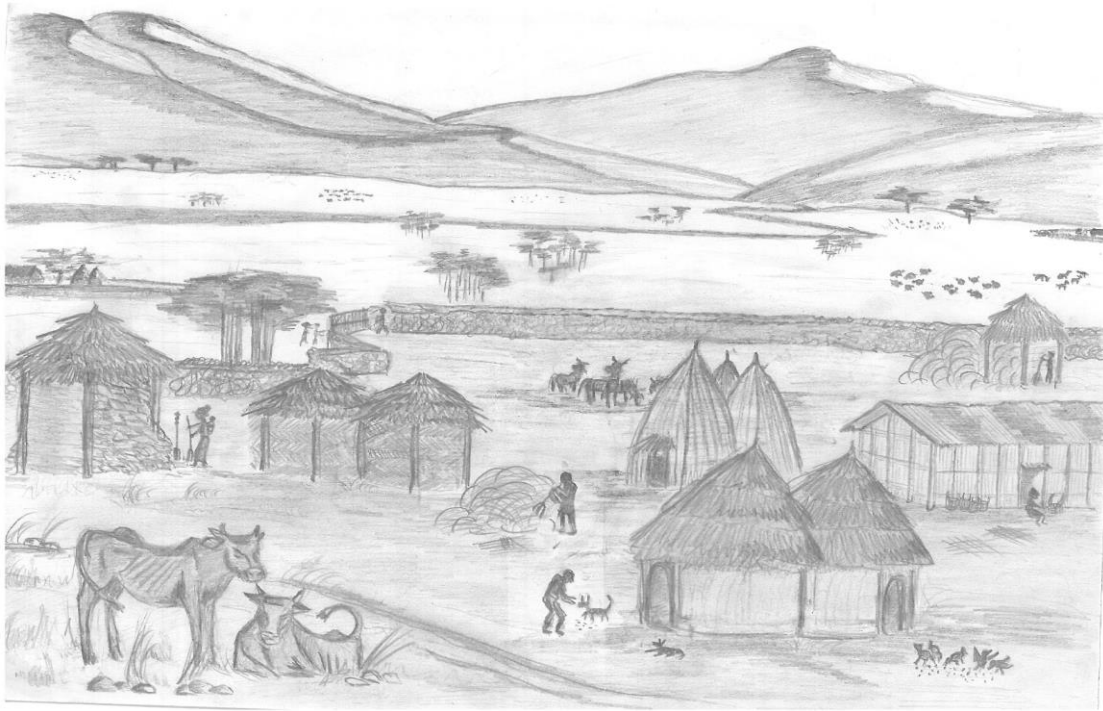


Figure 7.1: Farming homestead in Kibtya Kibtya (drawn in collaboration with Simone Lemmers)

Traditionally, most farmers in Kibtya used to live with the livestock under the same roof, but in the contemporary context, there are often two cottages (one for family living and another for livestock and cooking). Some well-off farmers have a tin-roofed house where they use the ground for animals, storing of crops and the upstairs for living space. Small cottages for storing hay and shade for the dried cow dung (to be used as fuel during wet seasons) is also common. Additional haystacks (if any) could also be piled up within the compound. Plantation (often Eucalyptus tree) is very common in terms of income generation and building of houses, so farmers plant them inside or outside the compound depending on the availability of space. *Awdima* (threshing site for crops) is often placed in the nearby area outside of farmers' homesteads.

Regarding settlements, villages are scattered throughout Kibtya. Each village group of consists of a group of cottages (about 15–20) with the average household 5–6 persons. Villages are clustered across some distance (approximately between 500 m to 1 km) and named after known ancestors. One informant explained that most villages in Amhara culture are often named after some kind of incidences which might have happened in the history of that particular village. Some also mentioned that Kibtya villages are named after distant

ancestors of respective village residents. For example, *Ali-Bahir* (one of Kibtya's villages) was named after a distant ancestor called *Ali*. *Bahir* means like a lake or river. One informant described that there is a story told about the place that it was marsh area and there was a lake where the individual ancestor called *Ali* used to live near by the lake. Another village *Abichu* was also named after a distant ancestor called *Abichu*. Another village is called *Aba-wasu* village, which is named after one of the ancestors called *wasu*. The prefix, *Aba* refers to a title given to show respect. However, the trend of the new community structure⁷² is potentially undermining the symbolic significance of ancestral names, which are associated with certain cultural and emotional values; instead, new names such as *ketena*,⁷³ *got*, and *kebele* are emerging to fit with the new system which is more related with political administration.

Household organization in the context of Kibtya revolves around allocation of tasks in which every member of a household is supposed to get down to his/her assigned work from early in the morning. Some may go off to participate in social works while the rest of the family share jobs (rearing animals, plough, cutting and threshing). This situation is similar even in the wider case such as in Amhara region, where task assignment (division of labour) at the household level is facilitated by all family members with domination of the house head (usually men). Citing Weber (1948), Reminick states that:

in Shoa of Amhara region, the system of authority is organized on the basis of kinship and economics and authority is exercised by the person who controls the essential resources. Obedience and loyalty are owed to the person rather than to the rule or the role. This person rules only by the consent of the group members, who stand to gain their patriarch's wealth upon his death. (1976: 751)

In Kibtya, gaining the 'patriarch's wealth' after death is important not only in terms of gaining material benefit, but also it is often associated with prestige and good social position. A person who inherits his/her parent's properties (including land and other wealth) is known as *werash*. *Werash*, is the local term given to children who have entitlements of inheritance

⁷² Government has introduced a new community structure for 'better communication and implementation purposes'. See Chapter 1 for details.

⁷³ *Ketena* is a kind of administrative area below the *kebele* level. Each *kebele* have some *ketenas* and each *ketena* has several *gots*. For example, Kibtya is a sum of 4 *gots*, under *ketena* 1 and 3 *kebele* (bottom-up).

from their parents.⁷⁴ The implication is sons and daughters need to be loyal and serve their parents to become '*werash*'. Another reason for loyalty is the fact that any member of the household (subject to his/her ability) is supposed to obey instructions, as active participation and helping the family is one of the main forms of kin-based and acceptable behaviour, while the reverse characteristic is condemned by members of the household as well as the entire community. In Kibtya, men are often the ones who take the responsibility for controlling the overall activities of households. This seemingly stems from the economic organization of households. Men often control the significant resources such as sale of animals, grains (women are allowed to sell grain only if it is in small amounts) and leasing of land. For these reasons, men usually have the dominant voice, including allocation of manpower and resources. Moreover, men are often responsible for ploughing, weeding (not as intensive as women), cutting, threshing and harvesting. They are also responsible for other activities, such as house building, selling or buying of animals and participating in community meetings. Men also grow trees (particularly eucalyptus tree) for sale and for building houses as well as for use as firewood. Apart from going to school, children (both genders) are mainly responsible for the rearing of animals. In their early years, such as up to 5–6 years, both girls and boys often spend their time in houses playing and taking part in some activities with their mothers; then the parents involve their children in gender-oriented activities. For example, girls would fetch water, help in household activities, and collect cow dung for firewood; boys are involved in helping their fathers in ploughing and other outdoor activities. Some common activities such as rearing of animals are carried out by both boys and girls. Donham (1990) explained that boys and girls at the age of 14 generally begin 'full-time' horticultural work in southern Ethiopia. He further explained that younger boys carry out herding and girls grinding grain, fetching water and caring for still younger children (1990: 30).

Next to the house head, senior women (such as mothers) have a say in any decision which might be made at the household level. Women have invisible power in decision making as men often make decisions after consulting with their wives. When it comes to economic power, women are involved in small-scale generation of income which is often used for household consumption. I observed that women often take a small amount of grain every market day to buy some spices, coffee, salt, soap and other supplements. They also breed

⁷⁴ A person can transfer such right of inheritance to other relatives or non-relatives depending on his relationship; or legal law might transfer this entitlement to the guardian of orphans (in the case where children are under the age of 18).

chickens so they have eggs and chicken for sale. Some women generate additional income as they make baskets and pottery.⁷⁵ Women also sell butter as they have the right to make use of and are responsible for taking care of and milking cows. Thus, as administrators of many households, women would generate income out of the sale of chicken, eggs, butter, some grain and handcrafts (basket, pottery), so responsibility for feeding the family largely falls on their shoulders. Figure 7.2 shows a local market in Kibtya in which women sell some grains and farming products so that they can buy other supplemental goods necessary for the household.



Figure 7.2: Views of local market at Masha town

Women's right to participate in outdoor activities is increasingly recognized in Ethiopia, including in Amhara region (Frankenberger et al., 2007: 58–59),⁷⁶ but their main responsibility is to carry out almost all kinds of household activities. In Kibtya, women have

⁷⁵ Pot making is practised by only a few local groups who were marginalized during the imperial regime.

⁷⁶ In the contemporary situation, women are entitled to participate in a number of activities including public meetings despite the situation in previous regimes.

networks at neighbourhood and community level. One of the women informants said that common places or situations for women to get together are weeding, rearing of animals, harvesting crops, group work in preparation for feasts, traditional praying ceremony such as *dua*, or religious prayer in church or mosque. The woman informant further said that:

When we meet, we often discuss about day-to-day agricultural practices such as weeding, harvesting, seasonality of crops (which crops to be seeded in the current year, what type of soil is good for the selected seed and so forth). We share or borrow household properties, farming tools, different skills (such as basketry, cooking and brewing), because this is how we fill the material and economic gap using our kinship in neighbourhood.

In addition to managing household tasks, women are expected to participate in farm activities including weeding, cutting (in some cases), and harvesting and rearing of animals. Seed saving and storing in appropriate locations is mainly the responsibility of women, so they are knowledgeable about different traits of crops (see details in Chapter 5). They are also responsible for managing use of crops in terms of deciding which seed variety is to be used for what purpose (consumption, marketing and planting). Hence, the aforementioned narrative reveals that every household member in Kibtya is participating in the maintenance of a subsistence farming economy. Related to this, Ingold explained that:

Of all the manifold tasks that make up the total current of activity in a community, there are none that can be set aside as belonging to a separate category of work, nor is there any separate status of being a worker. For work is life, and any distinction one might make within the course of life would be not between work and non-work, but between different fields of activity, such as farming, cooking, child-minding, weaving and so on. (1995: 5–6)

Farmers' lives in Kibtya are made up of joint efforts in the same manner as the above quoted explanation, so no one is left out (except infants and very old people) without being allocated a particular activity. The ideas of Ingold (2000) on allocation of tasks in rural households illuminate the empirical data from Kibtya in which various forms of activities are discussed during evenings (around the fire) or at any time of interaction during the day. A certain task is assigned largely based on kinship, care and one's ability (according to age and gender) rather than coercive measure. In the larger community (beyond the household level) of Kibtya, practising social life and farming tasks are not even limited by religion as both Christians and Muslims are living under the locally established cultural norms and ethics. I observed no

distinction between Christians and Muslims in terms of social relationships and kin-based interactions. This is not to generalize there is no distinction between Christians and Muslims in any forms of life. There are significant distinctions when it comes to marriage, food (particularly meat), worshipping and graveyard sites. However, both Christians and Muslims are often part of the same socio-cultural institutions, so they socialize and perform farming tasks together. On the other hand, other belief systems, such as rituals and cultural practices, are implicitly influenced by both religions (Christian and Muslim), whereby those people who undertake traditional prayer and rituals such as *shonat*, *dem mafses* and *duaa* are not appreciated by the society. This kind of influence has its own implication on agricultural productivity and conservation of local seeds, because farmers are tending to cease growing some seed varieties such as niger-seed, linseed, particular types of maize, particular types of *teff* (*tikur teff*) and so forth. Traditionally, these seeds were used to supplement various needs of farmers when they practise cultural ceremonies and rituals so that various forms of seeds were needed at the household, community and market level. As the trend of practising cultural activities and rituals is declining, the market demand for such seed varieties is also declining at different levels.

In sum, the culture of reciprocity and division of labour helps Kibtya's households to accomplish various tasks under the melded settings of farming activities and cultural practices. Most farmers use the locally distinguished term known as '*dir biabir anbesa yasir*'⁷⁷ to explain the value of working together. Division of labour at household level provides the opportunity for all family members to learn the make-up of social life and team working so that each member of the household would learn how to bear responsibility in relation to accomplishment of the assigned task at individual, social and cultural level. Children grow up observing how the whole family is socially and culturally organized and how each member bears responsibility. In this way they become prepared for the role they will play in the wider society.

Reciprocity of seeds and various forms of institutions in Kibtya

Farmers' socio-cultural systems are often operationalized through social institutions which are most important in the maintenance of communication and kin relations at different levels. The existence of these institutions creates stability by balancing farming practices and socio-

⁷⁷ Direct translation of this term would be 'spider web (if used in bulk) could tie a lion'.

cultural aspects of life through socialization and collaborative forms of labour. Social institutions have also played a significant role in maintaining peace and stability through different social control mechanisms, such as application of sanctions when norms are violated (Geertz, 1963). In the case of rural communities of Sub-Saharan Africa, the socio-cultural activities and practices as well as their inter-generational communication system have long been institutionalized while they are pursuing life ways along the changing environment (Skelton and Allen, 1999): ‘in Sub Saharan Africa, it is common to find an important social function for enterprises as well as their obvious role in making a living, in that they are meeting places for people engaging in widespread and varied social interactions’ (Skelton and Allen, 1999: 66).

In Ethiopia, the overall economic and social development of the country rests on widespread smallholder productivity where social bonding, interaction, institutional relationship and local knowledge all play a significant role (Cohen, 1987). In most cases, social institutions are the ones which create convenient conditions for people to come together, share ideas, knowledge and labour. In societies with a complex division of labour (like that of Kibtya), responsibility is divided between different institutions, such as family and other organizations (Eriksen, 2001). In any occasion of group work and socialization, farmers often prepare food and drink from different types of seeds to perform and socialize through a range of activities, cultural practices, rituals and feasts. As observed in other African countries, such as Goudel village of the Zarma tribe in Mali (Palmeri, 1979), and in Katheka in Kenya (Beshah, 2003), the power of some local institutions in Kibtya is still strong in terms of facilitating communication and kin relations in the process of agricultural productivity. In Kibtya, there are a number of social institutions with varied aims, activities and cultural practices in which farmers are involved according to respective needs and contexts. The network of personal word of mouth is the main communication system which is facilitated by the existing local institutions as they are still channelling people’s communications and serving as platforms for sharing knowledge in resource management, including conservation of seeds.

More generally, farmers agree that seed is the most respected sign of life in Kibtya and this is demonstrated through the day-to-day socio-cultural practices and farming activities. For example, most aspects of farmers’ lives are accompanied by social relations, cultural practices and rituals in which use of different types of seeds is associated with satisfying

material, social as well as spiritual needs in order to make a fuller picture of life. As described, there are a number of social institutions in Kibtya, which make use of different types of seeds to run their functionalities. The focus of the following sections is to show the centrality of various forms of seed diversities in operationalizing the existing social institutions in Kibtya; and, in turn, the role of these institutions for seed conservation through creating opportunities for people to get together to share knowledge on seed conservation.

The interplay of everyday task and seed management in different contexts of various social institutions

***Agmas* social institution**

Agmas is a social institution in which farmers help one another, particularly during threshing of *teff* crop and other crops too. *Agmas* literally means feast and is exclusively prepared from special seeds to serve people participating in threshing of crops (particularly *teff* crop) and to briefly conduct ritual⁷⁸ in the process of threshing. There are special seeds needed for preparation of *agmas* which are niger-seed, linseed, *teff*, and maize. Barley is also needed to prepare *tela* (local beer) or *bukri* (non-alcoholic local beer for Muslims). According to many informants, the main reason for connecting *agmas* with *teff* is associated with the special nature of *teff* in terms of threshing. Threshing of *teff* is not an easy task as it demands lots of labour (at the same time) in order to keep the quality of production by quick splitting of *teff* crop from its stalk (before it is mixed with the overcrush stalk [*ebik*]). One old informant told that in his youth, there was a tradition (during threshing of *teff* crop) in which farmers used to put some special plants (locally known as *shekest* and *ret*) in the middle of the nearby road. These plants were symbols of peace and generosity. Any passer-by is always welcomed to share some food (*agmas*) prepared for those who are threshing *teff* crop. As there was no formal means of communication, such as media and newspaper, the purpose of placing those plants on the nearby road seems to have been to invite the passer-by and share information about different issues beyond the given territory (particularly if a passer-by came from a distant place). The old informant also said that farmers used to spray their cattle (just before they start threshing) with water which is mixed with a special crop (locally known as *feto*).

⁷⁸ Before serving food, there is a little cultural ceremony in which the host farmer prepares some bread from the new production and spreads it to the earth/surface of the *awdima*/threshing circle. Some farmers told me that they believe 'the earth', which provides the seed, should taste the very first bit of production before humans consume any.

The reason was to make the animals calm⁷⁹ and peaceful while they were going round in the process of threshing. Farmers also used to carry out some spiritual activities such as smoking incense inside *awdima* (threshing site for crops), as they believed their production would be blessed and the surplus would be good. In sum, one can see that *agmas* institution has an important role in creating a space for people to work together, discuss and share information while enjoying a feast prepared from different seed diversities. Furthermore, such practice makes a significant contribution in terms of satisfying farmers' non-material needs through conducting rituals.

***Debo* social institution**

Debo is a form of traditional institution in which social work is practised and farmers help one another. According to many informants, *debo* is a kind of traditional institution in which groups of farmers gather to help an individual farmer in his/her farming activities such as weeding, harvesting and ploughing. *Debo* is particularly important when a given farmer is desperate for help for various reasons such as too much weed on his farm, unexpected rain and flood with potential damage to his harvest. The ideology behind *debo* is to ensure agricultural productivity through social work while building up societal kinship and socialization by bringing people together. The host farmer is supposed to prepare food (usually bread and roasted barley/wheat) and local beer (locally known as *tela/bukri*). The prepared food and drink should be served at the farm while farmers are working. After farmers complete their job for the day, the host farmer has to invite them to his/her home to enjoy the evening with a feast of food and drink. *Debo* is an important form of institution to maintain social relations and create space for farmers to discuss amongst themselves and with guests (if any), whereby sharing information on seed and farming is often the main issue of discussion. On one occasion, Dr Thomas Yarrow⁸⁰ (my adviser), and myself were attending a *debo* activity in which about 20 farmers were cutting *teff* crop which belongs to Ato Seidu Asen. In the evening, the host farmer (Ato Seidu Asen) invited us to his home to spend the evening with his family and all *debo* participants. When we arrived in Ato Seidu Asen's home (about 8 pm), all *debo* participants were enjoying local drinks and chatting. Dinner was

⁷⁹ One would need 4–10 animals to thresh a medium-sized stalk of crop so that farmers borrow their animals by turn. The purpose of making animals calm (through sprinkling of *feto* crop) seems to be to stop animals fighting each other as they come from different places.

⁸⁰ Starting from December, Kibtya farmers are busy in harvesting so there are number of group works facilitated by traditional institutions such as *debo*, *agmas* and the like. Dr Thomas was able to see one of the *debo* activities as he was in Kibtya to get to know the sense of what I am trying to explore in my research.

served and the Ato Seidu Asen's wife prepared coffee in a ceremony in which an essence was smoked and elders made traditional prayer before the snack (roasted barley) and coffee were served. While the coffee ceremony was under way, farmers formed sub-groups and discussed different social issues, particularly the current harvesting situations in relation to both types of seeds (HYVs and FSs).

This shows that such kinds of farming tasks are accomplished through various forms of social institution (*debo* in this case) and social work, because there is no separation between work and social activity in the way one would assume in the west (Ingold, 1995). Rather, the work of farming is integral to social life, and social relations are produced through this. Such situations reveal how farming activities are melded into socio-cultural practices in which one can see the link between physical and material aspects of farming with social and cultural ones. Accomplishment of such a multifaceted task needs integrated management in sharing jobs, working together as well as taking work seriously as part of one's life. This situation seems to impact on farmers' behaviour in which most of them give more value to social life than individual matters. Ingold draws detailed accounts of how tasks are understood in rural communities in which he explained that: 'tasks are never accomplished in isolation, but always within a setting that is itself constituted by the co-presence of others whose own performance necessarily has a bearing on one's own' (1995: 8). The main point one may consider about *debo* is the fact that it is not only achieving physical tasks through group work but also bringing farmers together, making and remaking kin relations, socializing through feasts and maintaining seeds with different diversities for a range of purposes. This shows how the different tasks interlock and intersect in Kibtya and how social relations provide the context for work as well as how work in turn creates social relations. Such phenomena are continuous and interlocked with one another as 'social phenomena are made up of a multiplicity of constructed and emergent realities' (Long, 2001: 2), whereby social life is characterized by continuous engagement with endless occurrences.

The interplay between various forms of tasks and institutions is not a simplistic matter as it is bounded by a range of customary laws and ethics. When it comes to the customary rule of *debo*, a group of participant farmers (in *debo* work) elect one person to facilitate the work. The elected person is known as *yekuren-Dagna*. He is responsible for ensuring the work is properly done and the host farmer serves the group with food and drink for the day. *Yekuren-*

Dagna is responsible to assign *debo* participants to different positions according to their time of arrival at a working site. Latecomers will be assigned to the middle of the line because a person in this position is supposed to control and cover the job of both his right and left positions. It is a tedious activity so that latecomers are being penalized for being late.



Figure 7.3: Debo work on cutting of fodder grass in Kibtya

Farmers who attended *debo* have a moral right to expect the same service and if they do not get the expected service, absentees could be penalized for their absence. These kinds of penalties and sanctions are implemented by the traditional by-law which is crafted to ensure every participant farmer would get the same service in response to what they rendered to their peers. Mauss (1969) states that there is no such thing as a simple exchange of goods or gift giving as most kinds of exchanges are bound by obligations to return gifts in which individuals involved in contracts are moral persons, clans tribes and families. In the context of Africa, the established norm in most communities reveals ‘social obligations to pay and to give, and the right to receive goods and services, built into social situations’ (Dalton, 1962: 370). In the context of farming life, seeds are often used as a means of communication, socialization and securing social position in the form of exchange and gift giving. This is a serious aspect of life because being destitute of seeds could cause farmers to be left out of active community participation. Sharp et al. reported the situation of destitute people in a study carried out at two zones in Amhara region:

Destitute are looked down on by other community members and are excluded from many social activities and community-based associations. Much of their alienation arises from their inability to meet the criteria for equal participation in social events. They cannot become members of certain religious associations (*mahebers*, *senbetes*)

because they are unable to contribute towards feasts and religious ceremonies. Being too poor to contribute to community funeral associations (*idirs*), they are buried without ceremony. (2003: 133)

This situation of lacking resources including seeds is therefore a very worrying issue, so every farmer will try his/her best to secure as sufficient seed as possible, not only for economic reason, but also for social and moral reasons. In sum, my account of the social organization of farming activities in Kibtya reveals how traditional institutions such as *debo* are used to bring people together for work, and the working context, in turn helps seed conservation through various forms of farming activities as well as socio-cultural practices.

On the other hand, a new labour-based institution has emerged in which most farmers (particularly youth and landless) are interested. Such an institution is a means of generating income, so the culture of traditional *debo* is being affected, whereby the central role of seeds (particularly from the perspective of socio-cultural value) will be negatively impacted. In the case of the new labour-based institution, farmers sell their labour for cash and this is particularly expensive during picking seasons. For example, ploughing goes with rain so farmers are often too busy to complete their activities before the rain stops. At peak times, farmers (particularly poor ones) often sell their labour (men could plough, cut crops and fodder grass, thresh crops; women could be involved in weeding, carrying and laminating of threshing sites [*awdima*]), so that rates for incidental labour is higher than in dry seasons. During peak times every farmer needs labour so that the labour cost will be as high as 30 birr⁸¹/day. Cutting crops gives a little bit of flexible time, so the labour cost can be reduced to up 20 birr/day. However, if rain comes during cutting time, farmers will be in a hurry to finish cutting before the rain spoils the crops, in which case the labour cost will often go higher. The same scenario is revealed in the case of northern Nigeria, central Sierra Leone and Benin (Richards, 1990; Vissoh et al., 2004). Richards (1990) explained that in Mogbuama (Sierra Leone), and Kaita (Nigeria), poorer farmers undertake farming labour in farming seasons so that rates for incidental labour is higher at these peak times.

Building on what has been explained in the aforementioned account of the central role of seeds in *debo*, I argue that farmers' perception of seeds is much more complex than its economic value, so that seeds are produced not only for consumption or marketing but

⁸¹ Ethiopian currency.

mainly to satisfy diverse needs of farmers through a complex set of institutions and social relations. Hence, the newly emerged labour-based institution would negatively affect such integrated settings, whereby *debo* and other reciprocity-based social institutions would be replaced by finance-oriented contractual agreement.

Wedding (*serg*) social institution

Wedding (*serg*) is another institution in which seeds play a large role as people prepare feasts from various types of seeds while accomplishing different tasks within the household and with neighbouring fellow farmers. The very common tradition of marriage in Amhara region is characterized by the day of the formal betrothal/engagement and the wedding day (Reminick, 1976). Children (both boy and girl) have no decision-making rights with regard to their first marriage. Particularly the choice of girls is in the hands of parents. The day of engagement is witnessed by a couple of elders from both the boy's and the girl's side, so that they set a definite date for the wedding ceremonies. In most cases the actual wedding ceremony is carried out several months later because both sets of parents need time to prepare for a great feast. Once preparation is completed, wedding ceremonies begin both in the bride's and groom's homesteads, where their parents separately entertain their relatives and friends (Reminick, 1976).

On one occasion during my routine ethnographic fieldwork in Kibtya, one of my key informants took me to see the process of a wedding ceremony. Most Kibtya farmers are part of the wedding and quite a number of them brought lots of food and drink which is made of different diversities of seeds to support the main host of the wedding. This kind of cooperative hosting of guests is locally termed as *awraj*. *Awraj* is a socially institutionalized arrangement based on reciprocity in which rural communities help the host of a wedding, mourning or other type of social gathering to feed his guests. In a single *awraj*, 24–30 guests will be seated in two lines (12 persons each side). Hence, the sponsor of one *awraj* is supposed to feed 24–30 guests and offer food and beverages. In the situation where there is no *awraj* or when there are unexpected guests, the host of the wedding is supposed to provide food and beverages.



Figure 7.4: People enjoying a wedding feast through *awraj* institution

The wedding feast in Kibtya usually continues for three days, but in most cases, lunch is the one at which many people are served. Management of scheduling *awrajes* is a very challenging one as it may cause conflict between sponsors of *awrajes*. This kind of management is often run by another institution called *kire*. The host person of the wedding explained that *kire* is primarily designed for mourning but it is also significant to facilitate wedding ceremonies. The main task of *kire* is to organize burials, support the bereaved family by some financial donation, and serve guests who may attend funerals and memorial feasts such as *tezkar* (see detail in the subsequent section). Nowadays, *kire* is extended to provide support for members whenever some kind of misfortune has happened to them. In the urban context, people often call *kire* as *iddir* and organization of *iddir* is increasingly appearing within colleagues in the same job (Pausewang, 1983). In Kibtya, *kire* members often meet once in a month to collect monthly contributions and discuss issues related to any problems in the community. *Yekire-dagna* is an elected chairperson of *kire* who organizes members and assigns different activities to them. Failing to obey the order of *yekire-dagna* and the bylaw of *kire* would result in a serious offence and sanction (depending on the severity of the case and the frequency of absenteeism) to the extent of suspending the right of a person from any sort of benefits and interactions with the community. Aredo explained that: ‘a member is required to attend meetings, be present on funeral ceremonies, visit the sick, etc. The by-laws of *kire* (*iddir*) are observed because of powerful social sanctions and fines’ (1993: 80). Coming back to management of *awraj* in the wedding, *yekire-dagna* is responsible for scheduling *awrajes* in terms of whose *awraj* should serve first, whose next ... on the first day, second day and so forth. The norm is that all sponsors of *awrajes* are supposed to gather on the eve of the wedding in order to agree on the schedule. The order of serving *awrajes* is

determined by drawing lots followed by registration according to the order. During the wedding day which I was part of, the schedule of *awrajes* was announced based on the lots which set out the order a day before the wedding.

Here also one can see how the task is embedded in a very complex setting of social organization in which its accomplishment is not seen in separation from social relations, reciprocity (one would expect the same service in response to what one does for others such as hosting *awraj*), norms and ethics. These kinds of occasions are also places of learning and sharing of experiences. On the occasion of the aforementioned wedding in Kibtya, two farmers were sat down in the corner and made conversation on how to plant seeds using different sizes of plough (other farmers were listening to the conversation and made their comments). The first conversant suggested a big plough should be used only for the first round and second round farming (*gemesa* and *ayema* consecutively) not for the final stage of farming (seeding crops). He argued that 'big plough (*maresha*) is not suitable for seeding as it buries seeds deep in to the soil and makes them decayed because shoots of seeds would not penetrate the earth all the way up from deep soil'. The second conversant contended that 'if seeds are buried deep in to the soil, it is good for two reasons. First, it can be protected from being eaten by birds. Second, those shoots of seeds which germinate from deep soil would grow with sufficient moisture and be productive even in the context where there is lack of rainwater, because their root is planted deeper'. The first conversant prefers a medium-sized plough (*maresha*) when he seeds crops because it would not bury seeds deep into the soil so the seeds can easily germinate and penetrate the top soil earlier. This would help seeds to grow fast before the rain stops, according to him. He said, 'by the time the rain stopped, those seeds which were quickly germinated from the shallow part of the soil would already be matured and able to provide yield ... when it comes to those seeds germinated from deep soil, they would release shoot at the later stage of the season so that the rain would stop before they get matured'. Conversation continued and other farmers made their comments. One farmer in particular commented that 'I support both ideas but in different contexts. In the context of previous days (when the weather conditions were cooler and rainfall more reliable), a bigger sized plough (*maresha*) would be useful as rain would stay longer so that late germinated seeds (from deep soil) would not suffer lack of water. In this case, farmers would get good production because the amount of production and the size of kernel from seeds germinated from deep soil are better than from those seeds germinated from shallow

soil. In the contemporary context (where the weather condition is warm and characterized by erratic rainfall), seeding deep into the soil would not be advisable because germination from deep soil would take longer so the rain would stop before crops get matured'. My analysis of a specific conversation at a wedding, illustrates a broader point about the way in which experiences and information about seeds are shared as part of everyday social interactions. Farmers discuss farming practices whenever they meet. In this way knowledge is built up through endless occurrences in everyday life. This implies that implementation and learning about different farming tasks is intermingled with social and physical aspects of rural livelihood in which various forms of social institution play a vital role to bring people together.

Mourning⁸² social institution

Various forms of social institution could be places for learning about seeds, associated farming skills and many other forms of knowledge (see detail in Chapter 5). Joint working and group performance is very challenging and needs to have various forms of terms, conditions and agreements on certain norms, rules and regulations. In the context of Kibtya community, one can argue that traditional institutions effectively substitute for formal bilateral or multilateral agreements which are common in modern institutions. What makes traditional institutions different is their existence attributed to social life in which seeds and associated contexts play a central role in creating space for people to socialize while socialization contributes to sustainable management of seeds. As has been described in the section on weddings (*serg*), I learned the central role of seeds in mourning ceremonies as people bring different kinds of seeds to sponsor the event. Such an event is run by *kire*, who help to organize tasks in the process of hosting guests. Frankenberger et al. explained that:

Traditional social institutions, such as *kire*, *ikub*, and *ertiban*, together, these social institutions provide support for households following the death of one of its members, mutual savings and credit opportunities, as well as sharing of labour for needy households (female-headed, elderly, disabled) (2007: 167).

The mourning ceremony often lasts for 3–4 days, so the role of traditional *kire* is very important in terms of serving guests and the family during these days. Neighbours in particular take the responsibility of preparing food and drink from different seeds.

⁸² Another means of social gathering.

Neighbours are also supposed to receive guests at their respective homes during the night (if the home of the dead person cannot accommodate all guests). In Kibtya, there are three types of mourning institutions in which different types of ceremonies are facilitated by *kire*. These traditional institutions of mourning are called *ye-elet-lekso*,⁸³ *merdo*⁸⁴ and *ye-ketero-lekso*⁸⁵. These institutions have significant roles in social life and seed management, because they create useful contexts for people to gather from different areas outside of the community and share experiences on various issues including seeds and associated farming knowledge.

***Duaa* (traditional prayer) social institution**

Duaa is another cultural practice in which people gather for prayer. The host person is supposed to prepare a feast from diverse seeds, including ceremonial coffee service decorated by green grass (*ketema*), popcorn (the roasted popcorn spread on the ground), and different types of essence (smoke throughout the ceremony). *Duaa* can be conducted in houses to ‘bless the family, production and animals’. It can also be conducted to stop natural calamity and is often practised on top of hills or under big trees in which case every community member is invited to attend. Old people often take the lead in blessing and guiding the process, while hosts of the event provide a feast of food and drink prepared from various types of seeds. During the practice of *duaa*, the so-called *mirikat* (blessing) is the main part of the entire event. *Mirikat* (blessing) is believed to bring surplus production and health to humans and animals, so every household in the community (irrespective of religion) would bring snacks, incense, different grains and chat.⁸⁶ Some farmers perform August prayer (*nehassie-duaa*) during the eve of every Ethiopian New Year,⁸⁷ i.e. at the end of August. This particular prayer seems to have the purpose of organizing a ceremonial occasion in sending

⁸³ *Ye-elet-lekso* is a situation when a person dies in the same place where he/she normally lives, so the burial ceremony is undertaken there.

⁸⁴ *Merdo* literally means ‘the death news’, which is a traditional ceremony whereby a given person is told about the death of a close relative (mostly immediate family and parents as well as grandparents and cousins) somewhere else.

⁸⁵ *Ye-ketero-lekso* is the extension of *merdo*. In this case, too, there is no burial ceremony; instead, there is a special ceremony in which people are invited to express their condolences to the family of the dead person. This type of mourning ceremony is designed to arrange a situation in which large number of people would be invited to the ceremony to complete mourning within a single day.

⁸⁶ Chat, also known as Khat in English, is ‘an evergreen perennial shrub plant that belongs to the Celastraceae family’ (Lemessa, 2001). Traditionally referred to by Muslims as ‘Flower of Paradise’ (Getahun and Krikorian, 1973).

⁸⁷ Ethiopian New Year starts by September.

off the previous and receiving new harvesting years consecutively. The host family often prepares different kinds of foodstuffs, including *injera*, *wot* (sauce), *tella* (local beer), roasted grains from different seeds, coffee and so forth. There is also slaughter of sheep or goats for those who lead the prayer (mostly they are Muslims even in houses of Christians). Different cereals, including niger seed, linseed, sorghum, chickpea and so forth, are used to prepare snacks for the coffee ceremony (this type of snack is locally known as *misamis*, where *misamis* is also common for another cultural practice called *shonat*). Here, one can see the intrinsic relationship between physical aspects of seed management (through making use of different seeds for *duaa* purposes) and abstracted social life where people develop emotional attachments with people, seeds, animals and so forth (through performing *duaa* practice [prayer] for the safety of all beings). One woman informant (58) said:

To me, I have to make sure whether I have the right diversity of seeds such as Niger seed (*nug*), linseed, special type of sorghum, and so forth. I can't do *duaa* and other cultural practices otherwise ... I like *duaa* as it is the only bridge between us and the Almighty God ... during my childhood, our parents used to make rain through *duaa* but now, we don't have much rain because we don't do *duaa* ... *duaa* brings us together and conduct prayer for all beings in clean heart and reconciliation ... without *duaa*, our life would be cursed and I saw this in my life.

This woman is deeply concerned about the use of seed diversities from the perspective of using them for *duaa*. This implies traditional social institutions exist not for their own sake but their existence is linked with different forms of tasks in people's lives, to get together, work or pray in groups, socialize, share knowledge on farming, seeds and so forth, in which one can see the intrinsic relationship between society, culture and seed. The belief that nature has spirit is also common in the wider context. Suchitta states that:

Many rural Thai believe that some living things and inanimate objects have souls and that one must try not to anger these spirits since they can cause bad fortune when they are displaced. These beliefs produce rituals among local people to ensure safety, ask permission to fish or ask for a good catch. (1989: 276)

I therefore argue that seed needs to be understood in relation to various aspects of social, spiritual and physical circumstances, in which they are often linked with social practices and institutions as these institutions in turn depend upon seeds.

The role of seeds in the process of reconciliation

Another means of social gathering in Kibtya is Council of elders, locally known as *shengo*. This council comprises old people and adults who are respected in the community. There is not, as such, a regular form of council, so *shengo* members are invited according to their own time and schedule. *Shengo* members are often chosen by conflicting parties based on their respective reputation for ability to resolve conflicts (often associated with age) and bring about reconciliation (Molvaer, 1980). The main aim of *shengo* is to solve any conflicts which may arise amongst community members. Sometime in October 2011, one of my informants took me to a place where some elders were undertaking a meeting on resolving a conflict between two farmers (one is male and the other female). Five old farmers took part in the meeting (*shengo*), most of whom were over 55 years old. Some of these *shengo* members said that the process of solving conflict will not end even if opposing parties reach an agreement based on the decision of the council of elders because , either parties or one of them may not be satisfied by the decision. Thus there is additional arrangement to organize a special event in which both parties as well as those involved in arbitration must be involved and socialize together. Hence, all involved parties in reconciliation are supposed to spend a night in the guilty party's home enjoying feasts and attending traditional prayer, which is believed to end the conflict forever. One of the conflicting parties described that

Soon, we will have a night to spend together. Elders who are part of the reconciliation, my opponent, me and other guests all of us will celebrate the reconciliation ... we will have *duaa* prayer, and feast ... we will feed together and this is the symbol of peace. You can't feed with your enemy and if you feed together, then there is no hate any longer or anger with one another.

Such process of reconciliation shows people have an integrated system to maintain peace and social relations in which various forms of seeds play a vital role through bringing elders and conflicting parties together.

Emergence of new institutions and their interaction with the existing socio-cultural and farming settings

In the contemporary context of rural communities, a number of government institutions, aid organizations and NGOs are involved, in which external actors such as experts and professionals are interacting with local people in the course of providing technical assistance. These kinds of newly emerging institutions and involvement of external actors into

communal life ways are increasingly impacting on the existing set of local institutions which are central in terms of maintaining social life and kin relations. Skelton and Allen explained that ‘in agriculture, communal work practices based on extended kinship are breaking down, but new forms based on shared interest are appearing’ (1999: 68).

My ethnographic data from Kibtya reveals that modern institutions are gradually emerging as a result of various forms of government intervention. For example, the government has established a different set of modern institutions such as schools, Farmers Training Centres (FTCs), veterinary clinics and health posts, so that a range of experts and professionals such as teachers, Development Agents (DAs), health service assistances, veterinary specialists and community police members are assigned in villages to run the respective modern institutions. This scenario brings social change in which communication and social relations of people and the existing institutional settings are revised according to the current situation. However, the existing norms and customary systems of Kibtya community are still functioning hand in hand with the newly emerging institutions, so that many aspects of routine life remained unchanged, as is also true in many African contexts. For example, Palmeri (1979) explained that structures of traditional institutions of the Zarma tribe in Mali (Goudel village) remained unchanged at least to the extent that modernization had not substantially affected their influencing power on the day-to-day life patterns. This implies traditional institutions remain important but their roles change in relation to changing circumstances. On the other hand ‘modern’ or ‘foreign’ institutions are adapted and domesticated in relation to existing practices and beliefs. For example, the new labour-based *debo* is adapted with the existing *debo* tradition in which cash is playing a vital role in the place of social life and seeds. Those who are contracted for the new labour-based *debo* focus on time as they often start working at 9 a.m. and end by 4 p.m., whereas the traditional *debo* gives attention to kin relations, so the *debo* participant starts working by early in the morning (about 7–8 a.m.) and keeps working until sunset (6 p.m.). However, in the new labour-based *debo*, people are still following some norms of traditional *debo* in relation to patterns of functionality. For example, host farmers still deliver some food and drink, contracted farmers in turn consider some extended time and so forth.

When it comes to general patterns of communication, different groups of farmers have established various levels of relationships with external actors (both within and outside of

Kibtya) so that the general pattern of relationship between external actors and community members can be termed as a complex one. In his seminal work on ‘development sociology’, Long pointed out the constant change at global and local level in which he criticized global-local separation as any form of change at global level is ‘re-localised within national, regional or local frameworks of knowledge and organisation which, in turn, are constantly reworked in interaction with the wider context’ (2001: 20). My ethnographic data from Kibtya supports such an account based on the fact that, although there are multifaceted challenges in terms of implementing smooth communication, farmers are increasingly engaged in a greater extent of interaction with different actors in which they keep adapting new knowledge systems within the existing framework while local systems and experience in turn spread beyond the local territory through means of modern institutions such as mass media, telecommunication and other infrastructure. In the context of Kibtya, communication between farmers and DAs depends on various contexts where the impact also differs according to the nature of interaction. For example, interaction between farmers and DAs (particularly those who come from other places) seems not very smooth as they are not real participants in the livelihood activities at the household level. This situation means DAs have limited understanding of the complexity of social relations and the impacts of social practices in the application of development work. In contrast, those DAs or health agents from within the community seem to have better knowledge about the meanings and social practices of seed diversities because they are involved in whatever activities (including rituals) their parents are undertaking. This would mean that they know more about the values of different resources (including seed diversity) from different perspectives than those DAs who come from outside a particular community. Skelton and Allen explained that:

what can seem to outsiders to be ‘irrational’ or ‘culturally determined’ such as ‘resistance to change’ and ‘conservatism’, make for sound sense once the material environments in which poor people operate and the interplay of these environments with their shared meanings of daily life are fully understood. (1999: 64)

In Kibtya, DAs and other external agents are living in separate compounds, so they are physically detached from the real life of the community. Hence, though some farmers may invite them to their homes when they have social events and feasts, it seems that external agents (particularly those who come from outside the community) are not part of some practices (such as spiritual practices) at the household level. This has created a gap in terms of understanding the complex meaning of social life in rural settings. This suggests that

understandings and attitudes of farmers towards resource management through the local system is being overlooked and being given little attention by government and external actors.

Conclusion

The chapter has described the inextricable linkages between management of seeds, farming activities, institutions and socio-cultural practices. The chapter describes how seeds in Kibtya are institutionalized and integrated with diverse socio-cultural and economic contexts in which many types of demands (economic, social and cultural) for various forms of seed are significant. Traditional or social institutions are found to be significant in terms of facilitating social life which is the basis for sharing information and knowledge through socialization and the sharing of tasks through the reciprocal exchange of labour. *Kire* is one example in terms of maintaining intimacy and kinship within society in which farmers help one another during weddings, mourning, and any other type of social event. Council of elders is another example, which resolves any arising conflicts through arbitration, so that it maintains peace in the course of agricultural production. This implies that smallholder farming in particular is constitutive of social relations; tasks generate and depend on personal relations, so that farmers' decision making in a particular situation, including seed, depends on economic and/or social needs.

Through extensive analysis of ethnographic accounts, the chapter examined how seeds are embedded in farming life in which people's everyday tasks are inextricably linked with social life. The interplay between social life, institutions and seeds reveals the way in which life works in Kibtya, which indicates the significance of a holistic approach when it comes to understanding rural livelihood within a wider context. This shows that we need to understand the multifaceted aspects of farmers' livelihoods, in which success in rural livelihood depends on the complex interaction between socio-cultural, political and economic issues. Based on the aforementioned ethnographic accounts from Kibtya, I argue that the role of seed is central and inextricably linked with farming activities and socio-cultural practices and is accompanied by traditional institutions where they are an integral part of such a complex system. Hence, physical and material aspects of farming activities are intertwined with emotional and socio-cultural practices which are often facilitated by institutions. I also

reiteratively argue that information, ideas and knowledge about farming and seed are inextricable from other aspects of life contexts.

Chapter 8: Conclusion

Towards a situated understanding of seed knowledge

A range of factors, including the rise of national and global development policies that promote technocratic and market-based agricultural interventions have led to the increasing marginalization of local farming knowledge. In particular, the promotion of HYVs has been associated with high-input top-down and technocratic agricultural systems that increasingly threaten knowledge and practices related to the cultivation of local varieties of seed. It is true that agricultural techniques that are implemented elsewhere can be one strategy to enhance productivity in which farmers benefit from higher yields. However, the contemporary implementation of modernizing agricultural policies in many African countries promotes maximization of yield through a homogenized farming system. This has resulted in failure, particularly in the context of smallholder farming under fragmented farmlands and differentiated agro-ecological zones (see detail in Chapter 4). My research reveals the limitations of such policies, which correspondingly marginalizes and degrades a range of existing local practices relating to the cultivation and use of local FSs.

Smallholder farmers' contribution to conservation of natural resources including genetic conservation of seed diversity should not be underestimated. We need to understand how life works in the context of smallholder agriculture under the complex set of institutions, socio-cultural practices and social relations. Such understandings are inherently specific and therefore need the context-based investigation of contemporary as well as historical phenomena to illuminate the social relations, practices and understandings through which they work. This is the strength of an intensive contextual assessment through an ethnographic approach as it brings about significant insight on both micro and macro levels to help formulation of appropriate policies. In the course of building such an argument, the study draws its conceptual framework from a combination of environmental, anthropological and agricultural approaches (Escobar, 1991, 2011; Ingold, 1995, 2000; Brush, 2004; Badstue et al., 2006). These have been used in combination with ethnographic accounts to reveal the very complex set of interactions between the study community (Kibtya) and external actors, particularly on land, seed management and associated farming knowledge.

In this PhD thesis, I have described local meanings, uses and understandings of seeds and examined associated farming knowledge in the process by which these understandings are learned. I have highlighted how social life and farming practices are intermingled with one another to the extent that there is no separation between social and physical or culture and nature (Ingold, 1995, 2000). In the interactions of farmers with seeds, the work of farming sustains a range of social relations, which in turn are constitutive of the knowledge that farmers hold.

In the context of Kibtya, seeds and productivity are not necessarily understood in terms of narrowly economic evaluations; rather, they are intimately bound up in a range of social activities and farming practices and are consequently valued in a range of different ways. The thesis suggests the need to understand the context-based decision making on the use of various forms of seeds and agricultural technologies rather than taking a particular aspect of seed or associated farming practice as good or bad. Knowledge is acquired based on a range of experiences and interactions of people amongst themselves and with nature through integrated social and physical aspects of life ways. Given detailed examination of knowledge, perception of seeds and productivity, this thesis reflects how seeds and associated farming knowledge are blended with physical and social phenomena.

The thesis takes inspiration from scholarship on indigenous knowledge (IK) (Inglis, 1993; Bebbington, 1993; Agrawal, 1995; Berkes et al., 2000; Yarrow, 2008) that highlights the extent to which local understandings constitute valuable forms of knowledge that need to be integral to developmental processes. However, the approach I have taken also highlights the problems and limitations of aspects of this approach. Dove (2000) has argued that the categorization of IK has been influenced by outside interests that have more to do with the perceptions of 'others' than with the ways in which 'others' have represented themselves.. The concept of IK entails that knowledge is isolated from history, whereby even the most remote of the smallholder groups who have been considered as non-indigenous are excluded. This implies knowledge is bounded within certain settings (group of people) and is static rather than dynamic, interactive, situated and practical. Such an understanding of IK would then lead us to make (to reduce) people's understandings to a diagram or a set of words in a book. Much of the work on IK assumes that knowledge operates as a bounded system, in which meanings are broadly shared. Knowledge is thus conceived in relatively abstract terms.

Methodologically such approaches tend to rely on approaches that separate the meanings and knowledge of local actors from the contexts in which knowledge is practically utilized.

By contrast, my research takes inspiration from environmental anthropologists (e.g. Ingold) to suggest that in Kibtya, much of the knowledge relating to agriculture, and specifically seed cultivation and use, is grounded in the practical interactions of everyday life. Such knowledge is not propositional but practical and hence cannot be reduced to an abstract system. While Participatory Rapid Appraisal (PRA) and other short-term methodologies may usefully characterize aspects of these practices for developmental purposes, detailed understanding requires long-term engagement to appreciate how farmers value, use and understand seeds in a range of practical and situated ways.

Understanding knowledge from its practical and situated perspective leads to new understandings of the local meanings, uses and significance of different kinds of seed. Debates between producers and environmentalists have often led to polarized understandings of merits or problems of HYVs and FSs, respectively. This thesis helps to reveal how in practice these different kinds of seed are often combined as part of livelihood strategies, and shows that here farmers' own assessments of these different varieties are context-specific and contextual. Farmers in Kibtya have experiential knowledge which they are using to grow a range of seed diversities which adapt to the varied soil types and micro-environment in the context of erratic rainfall. Despite the facts that the land is highly degraded, the soil is no longer fertile and people are very poor, Kibtya farmers have adapted to these conditions over many years and retained their diversified local crops with smallholding agricultural practices. In the context of scarce land resources, the higher productivity of HYVs is often significant. At the same time, farmers highlight the problems and limitations of HYV seeds. For example, new seeds and technology transfer is often accompanied by a number of socio-cultural changes and depletion of natural resources (through various forms of agro-chemicals), so there is a fear of gradual loss of local resources including FSs, associated cultural practices and experiential knowledge. In most smallholder farming traditions of the Amhara region as well as in Kibtya, seed-saving is not only for consumption or having seeds for planting next season, but also it is related to satisfying diverse needs, including preferred crop residue for animal feed and roofing for cottages, saving particular types of seed for cultural and spiritual

activities, ensuring social position and prestige through saving as many diverse seeds as possible.

Questioning economic productivity

The approach taken in this thesis is primarily intended to produce a context-specific understanding of farming practices and seed knowledge in Kibtya, but has wider implications for agricultural policy in Ethiopia and Africa more broadly. The common trend of agricultural policies in Africa has favoured market-oriented productivity, in which most African governments are promoting high input agriculture to increase maximum yield within limited amounts of land are (Pinstrup-Andersen and Schioler, 2001; Godfray et al., 2010; Fan et al., 2012). Such approaches are often adapted from Asian experience. However, in African contexts, the nature of production of staple food crops is often markedly different. Haugerud pertinently asserts that:

Markets are less well developed, and many small farmers continue to produce crops for home consumption, and to minimize their dependence on uncertain markets and government services ... To meet the needs of African agriculture, plant breeding research must focus on disease-resistant crop varieties that are productive on poor soils, that do not require chemical inputs, that tolerate rainfall extremes. (1988: 138)

This shows we should acknowledge that productivity is not always associated with improved seeds (HYVs) and chemical fertilizers. From this perspective the key consideration is which type of seed is suitable under various agronomic contexts in which distribution of precipitation, soil content, disease and pest is varied. While governments in Africa have often sought to increase economic productivity through agricultural modernization, such approaches have often overlooked how seed diversity is important in meeting a range of socio-cultural needs of farmers that are not reducible to narrowly economic calculations of value. The tendency for smallholder farmers to grow local Farmer's Seeds, rather than to maximize yield is from this perspective often seen as a mark of entrenched traditions, and even 'backwardness' that are incompatible with 'progress'. In the context of Kibtya, such policies have had significant impacts by shifting the existing production system to more market-oriented agricultural productivity (mainly through HYVs). I have suggested that one consequence of this is that some cultural practices which are crucial for the existence of FSs are increasingly marginalized and demand for FSs correspondingly declines. However, in the face of these changes, I have shown that FSs remain important and continue to be valued for a range of practical, symbolic and social reasons.

The Ethiopian Agricultural Transformation Agency (ATA) reported that in 2010, Ethiopia could increase agricultural GDP per smallholder by 95% by 2025, mainly through ‘promotion and implementation of improved seeds, expansion of cultivation land, irrigation, increasing export-based and high value products’ (Ethiopian Agricultural Transformation Agency, 2010: 17). However, my research suggests both that the implementation of these plans is likely to be compromised by various forms of local resistance, and that this in turn helps to highlight the failings of policies that promote agricultural modernization for narrowly economic reasons.⁸⁸ In particular, my account suggests that in Kibtya, as in a range of other smallholder farming contexts (Hazell and Diao, 2005; Kisamba-Mugerwa, 2005; Byerlee et al., 2009), staple food production assisted by local seeds constitutes an important and viable livelihood strategy under fragile and fragmented micro-environments. Staple food production contributes to economic growth by saving foreign exchange through building domestic production capacity and stopping importation of substitute foodstuffs and cereals which could have been the crucial challenge for African governments (Byerlee et al., 2009) (see detail in Chapter 4).

Based on ethnographic material from Kibtya and situating this in relation to accounts from elsewhere, I argue that achieving rural development in a range of African contexts is challenging unless more attention is given to smallholder agriculture. In these contexts agriculture does not exist as a self-evidently distinct domain of production (as commonly in western contexts) but, as I have shown, is interwoven in the fabric of everyday social relations and activities. Moreover, I have shown that the aim of these activities is not primarily to maximize yield. A more significant consideration is often to reduce risk through ensuring stability and sustainability of the production system. Any intervention and research endeavour which does not consider such local and contextual aspect of farming would likely have a challenge to achieving its goal. Evidence from Southeast Asian countries such as Indonesia, Malaysia and Thailand, as well as Taiwan, Republic of Korea and China; reveals that supporting smallholder agriculture resulted in growth in agricultural output (Binswanger and Deininger, 1997). These countries ‘reduced agricultural taxation in the 1970s and started to support smallholders ... they also established favourable macroeconomic policies, invested in rural infrastructure and social services, provided research and extension services, and

⁸⁸ For example, the approach of SDPRP was a ‘classical top-down method and PASDEP is sought to be a desktop policy document which is difficult to translate into concrete actions on the ground’ (Teshome, 2006: 2).

supported viable smallholder credit systems' (Binswanger and Deininger, 1997: 7). Further, smallholder farming has developed the dual functions of production and conservation under a resilient agro ecosystem to keep a stock of crop germplasm (Asfaw, 2000). This reveals the trade-off between yield and stability, particularly during times of environmental stress.

Such findings lead one to see the urgency of seeking alternative ways of achieving rural development and community resilience through identification of local priorities, input complementarities and understanding of natural and social environments. Farmers Seeds, which adapt to varied agro-ecologies, are usually productive without external input and associated technology which are expensive for smallholder farmers. Unlike high-input agricultural production systems that depend on mechanization, the genetically diversified FSs with smallholder farming provide greater yield stability as they have co-existed with diverse and volatile ecosystems for long periods in the history of agriculture (Orlove and Brush, 1996). Haugerud (1988) asserts that in Africa, the long-term practices of intercropping and cultivar mixtures have proved to be an excellent defence against biological and climatic hazards to crops. For example, Rwandan farmers often grow up to eight different potato cultivars, bananas, beans and sweet potatoes at once within farming fields. This mixed cropping was then found to be advantageous in terms of obtaining different traits from different seeds such as disease and pest resistance, tolerance of rainfall excesses and deficits, marketability, etc. Despite the fact that proponents of modern agriculture criticize smallholder farming for lacking adequate production, a number of cases are emerging: Latham (2012) compiled some empirical findings from India, Ethiopia, Mali and Nepal on the ability of smallholder farming to enhance productivity with locally available resources and organic materials. The experience of System Rice Intensification (SRI) is adapted from India, whereby productivity with SRI management usually increased by 50–100%, but sometimes by even more (Latham, 2012). The SRI experience is further adapted to fit with the context-based innovative productivity in which farmers applied the method to other crops.

System Wheat Intensification (SWI) is thus one approach to enhancing wheat productivity without external input such as chemical fertilizers and pesticides. In Ethiopia, I have seen through my own work that some NGOs (such as the Institute for Sustainable Development, ISD) brought the experience of SRI to adapt to other crops such as finger millet, maize, wheat and *teff*. Latham (2012) explained:

Farmers in northern Ethiopia started on-farm trials of SWI, assisted by the Institute for Sustainable Development (ISD), supported by a grant from Oxfam America. Seven farmers in 2009 averaged 5.45 tons/ha with SWI methods, the highest reaching 10 tons/ha. There was a larger set of on-farm trials in South Wollo in 2010. SWI yields averaged 4.7 tons/ha with compost and 4.9 tons/ha with inorganic nitrogen (urea) and phosphorus (DAP). The 4% increase in yield was not enough to justify the cost of purchasing and applying fertilizer. The control plots averaged wheat yields of 1.8 tons/ha.

Under such circumstances, agricultural policies in several countries are experiencing a strong trend to become more ecologically-friendly. Globally, ‘the mainstream model of production, based on intensive use of chemical inputs for crop protection such as pesticides, is increasingly challenged because of its environmentally damaging consequences (e.g. water pollution, harm to biodiversity, etc.) and the negative impacts on consumer and producer health (e.g. the carcinogenic effect of some agro food components)’ (Mzoughi, 2011: 1536). However, most African governments are increasingly interested in making use of agriculture to achieve economic growth with the focus on economic aspects per se and with the purpose of ensuring food security while providing surplus production to industries. Against the grain of these policies, my research suggests that achieving high-input agricultural growth in smallholder farming, particularly in less favoured areas (Ruben, 2005) is challenging without considering multiple aspects of farmers’ experiential knowledge and a range of socio-cultural and environmental factors.

In the Ethiopian context, this study identified the fact that the growing trend of introducing a new farming system ignores the socio-cultural and associated environmental aspects of smallholder farmers’ knowledge. For example, the value of acknowledging farmers’ knowledge and local practices associated with farming is not explicitly mentioned in land administration and use proclamations at both regional and federal levels. Instead, more emphasis is given to physical conservation of land, soil fertility, land use rights, investment plans, and so forth (FDRE, 2005; Amhara National Regional State, 2006). Regarding the land use plan, the Amhara National Regional State proclamation No. 133/2006 reads as follows:

‘Land Use Plan’ means the system of making practical the better chosen alternatives to use land without degradation and environmental pollution based on physical, economic and social information and includes strategic and area development plans. (2006: 2)

Here, the phrase ‘better chosen alternatives’ is ambiguous, as it is not clear what the ‘better alternatives’ are. Who chooses them, and in what circumstances? In this quote, there is no explicit account of how farmers’ socio-cultural and environmental knowledge is considered in land use planning, because the term ‘social information’ is not sufficient to understand the complex set of communities’ livelihood strategies. The challenge of communication between Kibtya farmers and DAs is one example, as the claim of DAs on ‘participatory decision making’ has not worked when it comes to implementation of ‘agreed plans’. External agents claimed that they facilitated participatory meetings to make sure decisions on purchasing of fertilizers were made by the prior informed consent of the community. In practice, most farmers refused to buy chemical fertilizers despite their agreement in public meetings.

Long (1990) states that decision making entails a complex set of social, cultural and political considerations in which the role of individual and group actors/agencies (under the specific socio-cultural background) may influence the direction of decisions to be taken because their existence is interwoven with other persons as well as institutional frameworks. In this regard, farmers could remain silent when decisions are made by external agents at the expense of their own interests. Scott explains this kind of silent resistance often ‘requires little or no coordination or planning; they make use of implicit understandings and informal networks; they often represent a form of individual self-help; they typically avoid any direct, symbolic confrontation with authority’ (1985: xvi). This reveals the significance of understanding the socio-cultural aspect of community livelihood, which determines how decisions are made and shared across the community.

In Kibtya, the government’s development approach combines both top-down and bottom-up perspectives. Development Agents (DAs) advocate top-down communication systems in order to implement policies, while using bottom-up communication to incorporate community decisions into development planning. DA rhetoric of participation in government development planning and decision making is rare in practice. The term ‘participation’, as it has been criticized by Mosse (2001), is often used to achieve a particular agenda set out by external agents so that its implementation depends on how participation is perceived with regard to its importance beyond the notion of confinement to ‘people’s knowledge’ and planning. Hence, the participatory approach, whether through PRA methodologies or in other contexts, in practice rarely brings about real change. Because it is taken in the context of pre-

existing relationships between external agents and dominant groups within communities such as group leaders, elders, model farmers or political party members (in the case of Kibtya), it rarely results in the kinds of change that might lead to improved outcomes for farmers. My research reveals that there is a significant relationship between farming practices and politics, and farmers are well aware of this relation. Consequently relationships to government agents are often complex, characterized by secrecy and concealment that makes most farmers hesitant in terms of criticizing development plans.

In order to mitigate the effects of misunderstandings and fill the communication gap between local interests and development plans, we need to develop appropriate policies which consider the intrinsic relationship between nature and culture; social and physical as well as economic and non-economic factors. Implementations of such policies should also be guided by flexible approaches according to different socio-cultural and environmental contexts rather than using top-down or instructive approaches. In practice, the Amhara National Regional State proclamation underlines the importance that land users follow instructions according to land use plans, where the emphasis is maximizing economic benefit based on instruction from external agents: ‘any land user shall be made to use land in accordance with the land use plan to be issued thereof’ (Amhara National Regional State, 2006: 13).

Such kinds of homogenized land use plans would not accommodate various forms of socio-cultural and environmental situations of communities that are intertwined with historical and contemporary factors, kin-based social relations as well as practice-based knowledge maintenance. Policy formulation on certain areas of development, implementation and achieving of outcomes is not the simple process as expected or analysed in written documents because, ‘there is no straight line from policy to outcomes as “outcomes” are often results of factors which cannot be directly linked to the implementation of a particular development programme’ (Long, 1990: 15). In other words, although policy implementation focuses on the goal-setting process, achievement and commitment to sustainable development through societal participation may not come into effect as originally intended by government intervention strategies, as societal actors or local groups could be unwilling to follow the path chosen for them (Long, 1990; Brand and Karvonen, 2007). Further on from the need for context-based and flexible policies, one can see that the trend of substituting traditional farming practices with modern technology seems to be impacting upon social and

environmental capital. Such an alarming situation needs the attention of governments and other stakeholders to develop a more flexible and accommodative policy approach which considers the different contexts in which smallholder agriculture is practised.

My thesis reveals the limitations of top-down approaches and the problems with assumptions made by various policy makers about the economic motivations of local actors and ethnographically shows how these assumptions are misplaced. Through showing the complex interactions in which policy is translated into practice and by showing how people are not primarily motivated by a desire for surplus, I suggest the need to extend further research to understand the complex set of socio-cultural and environmental aspects of seed management and associated farming knowledge.

My findings draw the attention of government to take up necessary measures and formulate appropriate policy, because understanding the very local nature of a certain context would help in planning an appropriate intervention programme in which outside actors would be involved in an ongoing socially constructed and negotiated process, rather than execution of a specified plan of action with expected outcomes (Long, 1990). The study has also provided a fertile ground for NGOs and other stakeholders to learn from the aforementioned research outputs, which may, as a result, help them to adjust their intervention programmes with new insights and information, in which smallholder farmers would get relevant support to maintain their knowledge which is integrated within a range of socio-cultural and environmental contexts. Hence, the findings of this study will help to advance academic understanding of the socio-cultural and environmental significance of seeds, in Ethiopia and beyond, whereby these understandings will in turn enable more culturally sensitive development projects pertaining to these issues.

References

- ABEBE, A. 2010. *A Baseline Survey on the Ethiopian Seed Sector*. Addis Ababa: AFSTA.
- ABEGAZ, B. 2004. Escaping Ethiopia's poverty trap: The case for a second agrarian reform. *The Journal of Modern African Studies*, 42, 313–342.
- ABERRA, Y. 2004. Problems of the solution: intervention into small-scale irrigation for drought proofing in the Mekele Plateau of northern Ethiopia. *Geographical Journal*, 170, 226–237.
- ADENEW, B. & ABDI, F. 2005. *Research report 3: Land Registration in Amhara Region, Ethiopia*. London: IIED.
- AGRAWAL, A. 1995. Dismantling the divide between indigenous and scientific knowledge. *Development and Change*, 26, 413–439.
- AIKENHEAD, G. S. & OGAWA, M. 2007. Indigenous knowledge and science revisited. *Cultural Studies of Science Education*, 2, 539–620.
- ALEMU, D., SHAHUDUR, R. & ROB, T. 2010. *Ethiopia Seed System Diagnostic* [Online]. Available at: <http://www.ata.gov.et/news/resources/studiesassessments/> [Accessed 20 March 2013].
- ALTIERI, M. A. & MERRICK, L. 1987. In situ conservation of crop genetic resources through maintenance of traditional farming systems. *Economic Botany*, 41, 86–96.
- AMHARA NATIONAL REGIONAL STATE. 2006. Amhara Rural Land Administration and Use Proclamation. Proclamation No. 133/2006.
- ANTWEILER, C. 1998. Local knowledge and local knowing. An anthropological analysis of contested 'cultural products' in the context of development. *Anthropos*, 93, 469–494.
- ARCE, A. 2011. State policy intervention in an era of civic participation. In: LONG, N., JINGZHONG, Y. & YIHUAN, W. (eds.) *Rural Transformations and Development – China in Context: The Everyday Lives of Policies and People*. Northampton, MA: Edward Elgar.
- AREDO, D. 1993. The Iddir: A study of an indigenous informal financial institution in Ethiopia. *Savings and Development*, 17, 77–90.
- ASFAW, Z. 2000. The barleys of Ethiopia. In: BRUSH, S. B. (ed.) *Genes in the Field: On-Farm Conservation of Crop Diversity*. Boca Raton, FL: Lewis Publishers.
- ATKINSON, P. & HAMMERSLEY, M. (1994). Ethnography and participant observation. In: DENZIN, N. & LINCOLN, Y. (eds.) *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage.
- AYALEW, W., KING, J., BRUNS, E. & RISCHKOWSKY, B. 2003. Economic evaluation of smallholder subsistence livestock production: lessons from an Ethiopian goat development program. *Ecological Economics*, 45, 473–485.
- AYENEW, M. 2002. Decentralization in Ethiopia. In: ZEWEDE, B. & PAUSEWANG, S. (eds.) *Ethiopia: the Challenge of Democracy from Below*. Uppsala and Addis Ababa: Nordiska Afrikainstitutet.
- BADSTUE, L. B., BELLON, M. R., BERTHAUD, J., JUÁREZ, X., ROSAS, I. M., SOLANO, A. M. & RAMÍREZ, A. 2006. Examining the role of collective action in an informal seed system: A case study from the Central Valleys of Oaxaca, Mexico. *Human Ecology*, 34, 249–273.
- BAKER, J. 2012. Migration and mobility in a rapidly changing small town in northeastern Ethiopia. *Environment and Urbanization*, 24, 345–367.
- BEBBINGTON, A. 1993. Modernization from below: An alternative indigenous development? *Economic Geography*, 69, 274–292.
- BELETE, A., DILLON, J. L. & ANDERSON, F. M. 1991. Development of agriculture in Ethiopia since the 1975 land reform. *Agricultural Economics*, 6, 159–175.
- BELLON, M. R. 2004. Conceptualizing interventions to support on-farm genetic resource conservation. *World Development*, 32, 159–172.
- BELLON, M. R. & RISOPOULOS, J. 2001. Small-scale farmers expand the benefits of improved maize germplasm: A case study from Chiapas, Mexico. *World Development*, 29, 799–811.
- BERGER, G. 1992. *Social Structure and Rural Development in the Third World*. Cambridge: Cambridge University Press.

- BERKES, F., COLDING, J. & FOLKE, C. 2000. Rediscovery of traditional ecological knowledge as adaptive management. *Ecological Applications*, 10, 1251–1262.
- BERNARD, H. 2006. *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. Walnut Creek: Altamira Press.
- BESHAH, T. 2003. *Understanding farmers: explaining soil and water conservation in Konso, Wolaita and Wello, Ethiopia*. PhD thesis, Wageningen University.
- BICKER, A., SILLITOE, P. & POTTIER, J. (eds.) 2004. *Development and Local Knowledge: New Approaches to Issues in Natural Resources Management, Conservation and Agriculture*. New York: Routledge.
- BINSWANGER, H. P. & DEININGER, K. 1997. Explaining agricultural and agrarian policies in developing countries. *Journal of Economic Literature*, 35, 1958–2005.
- BINSWANGER, H. & PINGALI, P. 1989. Technological priorities for farming in Sub-Saharan Africa. *Journal of International Development*, 1, 46–65.
- BISHAW, B. 2001. Deforestation and land degradation in the Ethiopian Highlands: A strategy for physical recovery. *Northeast African Studies*, 8, 7–25.
- BLOOR, D. 1983. *Wittgenstein: A Social Theory of Knowledge*. London: Macmillan.
- BODNER, G. M. 1986. Constructivism: A theory of knowledge. *Journal of Chemical Education*, 63, 873–878.
- BOWEN, M. L., CHILUNDO, A. & TIQUE, C. A. 2003. Social differentiation, farming practices and environmental change in Mozambique. In: BASSETT, T. J. & CRUMMEY, D. (eds) *African Savannas: Global Narratives and Local Knowledge of Environmental Change*. Oxford: James Currey.
- BRAND, R. & KARVONEN, A. 2007. The ecosystem of expertise: Complementary knowledges for sustainable development. *Sustainability: Science, Practice, & Policy*, 3, 21–31.
- BROWN, A. H. D. 1978. Isozymes, plant population genetic structure and genetic conservation. *TAG – Theoretical and Applied Genetics*, 52, 145–157.
- BRUNER, J. S. 1966. *Toward a Theory of Instruction*. Cambridge, MA: Belknap Press.
- BRUSH, S. B. 2004. *Farmers' Bounty: Locating Crop Diversity in the Contemporary World*. New Haven, CT: Yale University Press.
- BYERLEE, D., DE JANVRY, A. & SADOULET, E. 2009. Agriculture for development: Toward a new paradigm. *Annual Review of Resource Economics*, 1, 15–31.
- CALVO-IGLESIAS, M. S., CRECENTE-MASEDA, R. & FRA-PALEO, U. 2006. Exploring farmer's knowledge as a source of information on past and present cultural landscapes: A case study from NW Spain. *Landscape and Urban Planning*, 78, 334–343.
- CAMPBELL, B. 2005. On 'loving your water buffalo more than your own mother': relationships of animal and human care in Nepal. In: KNIGHT, J. (ed.) *Animals in Person: Cultural Perspectives on Human-Animal Intimacy*. Oxford: Berg.
- CARTER, R. 1989. *NGO Casebook on Small-Scale Irrigation in Africa*. Rome: FAO.
- CHAMBERS, R. 1983. *Rural Development: Putting the Last First*. London: Longman.
- CLAWSON, D. L. 1985. Harvest security and intraspecific diversity in traditional tropical agriculture. *Economic Botany*, 39, 56–67.
- CLEVELAND, D. A., SOLERI, D. & SMITH, S. E. 1994. Do folk crop varieties have a role in sustainable agriculture? *BioScience*, 44, 740–751.
- COE, C. 2005. *Dilemmas of Culture in African Schools: Youth, Nationalism, and the Transformation of Knowledge*. Chicago, IL: University of Chicago Press.
- COHEN, J. M. 1987. Rural development in Ethiopia and Chilalo. In: *Integrated Rural Development: The Ethiopian Experience and the Debate*. Uppsala: The Scandinavian Institute of African Studies, pp. 39–69.
- COHEN, J. M. & WEINTRAUB, D. 1975. *Land and Peasants in Imperial Ethiopia*. Assen, The Netherlands: Van Gorcum.
- COLLINS, A., GREENO, J. & RESNICK, L. 1992. Cognition and learning. In: BERLINER, B. & CALFEE, R. (eds) *Handbook of Educational Psychology*. New York: Macmillan.
- CROLL, E. & PARKIN, D. 2002. *Bush Base, Forest Farm: Culture, Environment, and Development*. New York: Routledge.
- CROOK, T. 2000. Length matters: A note on the GM debate. *Anthropology Today*, 1, 8–11.

- CRUMMEY, D. 2000. *Land and Society in the Christian Kingdom of Ethiopia: From the Thirteenth to the Twentieth Century*. Champaign, IL: University of Illinois Press.
- CUFFARO, N. 2003. *Population, Economic Growth and Agriculture in Less Developed Countries*. New York: Routledge.
- DALTON, G. 1962. Traditional production in primitive African economies. *The Quarterly Journal of Economics*, 76, 360–378.
- DANIEL, M. 2007. Neoliberal times: Progress, boredom, and shame among young men in urban Ethiopia. *American Ethnologist*, 34, 659–673.
- DEININGER, K., ALI, D. A. & ALEMU, T. 2008. *Impacts of Land Certification on Tenure Security, Investment, and Land Markets* [Online]. Available at: <http://hdl.handle.net/10535/6255> [accessed 4 December 2013].
- DEININGER, K. & CHAMORRO, J. S. 2004. Investment and equity effects of land regularisation: the case of Nicaragua. *Agricultural Economics*, 30, 101–116.
- DEININGER, K. & JIN, S. 2006. Tenure security and land-related investment: Evidence from Ethiopia. *European Economic Review*, 50, 1245–1277.
- DELGADO, C. 1999. Sources of growth in smallholder agriculture in Sub-Saharan Africa: The role of vertical integration of smallholders with processors and marketers of high value-added items. *Agrekon*, 38, 165–189.
- DENU, B., TEKESTE, A. & VAN DER DEIJL, H. 2005. Characteristics and determinants of youth unemployment, underemployment and inadequate employment in Ethiopia. Working paper, Employment Strategy Department, International Labour Office.
- DENZIN, N. K. 2000. *The Discipline and Practice of Qualitative Research*. Thousand Oaks, CA: Sage Publications.
- DONHAM, D. L. 1990. *History, Power, Ideology: Central Issues in Marxism and Anthropology*. Cambridge: Cambridge University Press.
- DOUGLAS, M. 2003. *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*. New York: Routledge.
- DOVE, M. R. 2000. The life-cycle of indigenous knowledge, and the case of natural rubber production. In: ELLEN, R., PARKES, P. & BICKER, A. (eds) *Indigenous Environmental Knowledge and its Transformations: Critical Anthropological Perspectives*. New York: Routledge.
- EGE, S. 1997. *The Promised Land: The Amhara Land Redistribution of 1997* [Online]. Available at: www.svt.ntnu.no/ethiopia/c18xPromisedLandFull.pdf [accessed 4 December 2013].
- ELLEN, R., PARKES, P. & BICKER, A. 2000. *Indigenous Environmental Knowledge and its Transformations: Critical Anthropological Perspectives*. New York: Routledge.
- ERAUT, M. 2000. Non-formal learning and tacit knowledge in professional work. *British Journal of Educational Psychology*, 70, 113–136.
- ERIKSEN, T. H. 2001. *Small Places, Large Issues*. London: Pluto Press.
- ESCOBAR, A. 1991. Anthropology and the development encounter: the making and marketing of development anthropology. *American Ethnologist*, 18, 658–682.
- ESCOBAR, A. 2011. *Encountering Development: The Making and Unmaking of the Third World (New in Paper)*, Princeton University Press.
- ETHIOPIAN AGRICULTURAL TRANSFORMATION AGENCY (ATA) 2010. *Ethiopia Agriculture Diagnostic Integrated Report* [Online]. ATA. Available at: <http://www.ata.gov.et/news/resources/studiesassessments/> [Accessed 20 March 2013].
- ETHIOPIAN GOVERNMENT. 1991. *Constitution and Federal Legislation* [Online]. [Accessed 21 September 2012].
- EVANS, L. T. 1996. *Crop Evolution, Adaptation and Yield*. Cambridge: Cambridge University Press.
- FAN, M., SHEN, J., YUAN, L., JIANG, R., CHEN, X., DAVIES, W. J. & ZHANG, F. 2012. Improving crop productivity and resource use efficiency to ensure food security and environmental quality in China. *Journal of Experimental Botany*, 63, 13–24.
- FDRE. 2005. *Rural Land Administration Proclamation of the Federal Government of Ethiopia* [Online]. Addis Ababa: FAOLEX – legislative database of FAO Legal Office. Available at: www.ethiopar.net [accessed 1 December 2013].

- FEDOROFF, N. V., BATTISTI, D. S., BEACHY, R. N., COOPER, P. J. M., FISCHHOFF, D. A., HODGES, C. N., KNAUF, V. C., LOBELL, D., MAZUR, B. J., MOLDEN, D., REYNOLDS, M. P., RONALD, P. C., ROSEGRANT, M. W., SANCHEZ, P. A., VONSHAK, A. & ZHU, J. K. 2010. Radically rethinking agriculture for the 21st century. *Science*, 327, 833–834.
- FERGUSON, J. 1999. *Expectations of Modernity: Myths and Meanings of Urban Life on the Zambian Copperbelt*. Berkeley, CA: University of California Press.
- FRANKENBERGER, T. R., SUTTER, P., TESHOME, A., ABERRA, A., TEFERA, M., TAFFESSE, A., BERNARD, T., SPANGLER, T. & EJIGSEMAHU, Y. 2007. *Ethiopia: The Path to Self-Resiliency* [Online]. Available at: http://scholar.google.co.uk/scholar?hl=en&as_sdt=0,5&q=Ethiopia%3A+The+Path+to+self-resilience [Accessed 26 November 2013].
- GEBER, B. A. 1977. *Piaget and Knowing: Studies in Genetic Epistemology*. London: Routledge.
- GEBRESELASSIE, S. 2006. Intensification of smallholder agriculture in Ethiopia: Options and scenarios. Future Agricultures Consortium Meeting at the Institute of Development Studies, 20–22 March.
- GEERTZ, C. 1963. *Peddlers and Princes: Social Development and Economic Change in Two Indonesian Towns*. Chicago, IL: University of Chicago Press.
- GERSHON, F. & FEENY, D. 1991. Land tenure and property rights: Theory and implications for development policy. *The World Bank Economic Review*, 5, 135–153.
- GERSHON, F., ONCHAN, T. & CHALAMWONG, Y. 1988. Land policies and farm performance in Thailand's forest reserve areas. *Economic Development and Cultural Change*, 36, 483–501.
- GETAHUN, A. & KRIKORIAN, A. 1973. Chat: coffee's rival from Harar, Ethiopia. I. Botany, cultivation and use. *Economic Botany*, 27, 353–377.
- GETE, Z., GETACHEW, A., DEJENE, A. & SHAHID, R. 2010. *Fertilizer and Soil Fertility Potential in Ethiopia: Constraints and Opportunities for Enhancing the System*. Federal Democratic Republic of Ethiopia-Ministry of Agriculture.
- GLASER, B. G. 1992. *Emergence vs Forcing: Basics of Grounded Theory Analysis*. Mill Valley, CA: Sociology Press.
- GODFRAY, H. C. J., BEDDINGTON, J. R., CRUTE, I. R., HADDAD, L., LAWRENCE, D., MUIR, J. F., PRETTY, J., ROBINSON, S., THOMAS, S. M. & TOULMIN, C. 2010. Food security: The challenge of feeding 9 billion people. *Science*, 327, 812–818.
- GOLDMAN, A. I. 1986. *Epistemology and Cognition*. Cambridge, MA: Harvard University Press.
- GOODY, J. 1975. *Literacy in Traditional Societies*. Cambridge: Cambridge University Press.
- GOODY, J. 1980. *Technology, Tradition, and the State in Africa*. New York: Cambridge University Press.
- GRAY, J. 1998. Family farms in the Scottish borders: a practical definition by hill sheep farmers. *Journal of Rural Studies*, 14, 341–356.
- GUDEMAN, S. 1992. Remodeling the house of economics: Culture and innovation. *American Ethnologist*, 19, 141–154.
- HABARUREMA, E. & STEINER, K. G. 1997. Soil suitability classification by farmers in southern Rwanda. *Geoderma*, 75, 75–87.
- HAUGERUD, A. 1988. Anthropology and interdisciplinary agricultural research in Rwanda. In: BROKENSHA, D. W. & LITTLE, P. D. (eds.) *Anthropology of Development and Change in Eastern Africa*. Boulder, CO: Westview Press.
- HAUGERUD, A. & COLLINSON, M. P. 1990. Plants, genes and people: Improving the relevance of plant breeding in Africa. *Experimental Agriculture*, 26, 341–362.
- HAYAMI, Y. & RUTTAN, V. W. 1971. *Agricultural Development: An International Perspective*. Baltimore, MD: The Johns Hopkins University Press.
- HAZELL, P. & DIAO, X. 2005. The role of agriculture and small farms in economic development. In: IFPRI, ODI & ICL (eds) *The Future of Small Farms: Proceedings of a Research Workshop*, Wye UK, 26–29 June. Washington, DC: International Food Policy Research Institute, pp. 23–36.
- HOBART, M. (ed.) 1993. *An Anthropological Critique of Development: The Growth of Ignorance*. London: Routledge.

- HOBEN, A. 1972. Social anthropology and development planning – A case study in Ethiopian land reform policy. *The Journal of Modern African Studies*, 10, 561–582.
- HOBEN, A. 1973. *Land Tenure among the Amhara of Ethiopia: The Dynamics of Cognatic Descent*. Chicago, IL: University of Chicago Press.
- HOBEN, A. 1995. Paradigms and politics: The cultural construction of environmental policy in Ethiopia. *World Development*, 23, 1007–1021.
- INGLIS, J. 1993. *Traditional Ecological Knowledge: Concepts and Cases*, Ottawa, Canada: International Program on Traditional Ecological Knowledge.
- INGOLD, T. 1995. Work, time and industry. *Time & Society*, 4, 5–28.
- INGOLD, T. 2000. *The Perception of the Environment*. London and New York: Routledge.
- JACOBY, H. G., LI, G. & ROZELLE, S. 2002. Hazards of expropriation: Tenure insecurity and investment in rural China. *American Economic Review*, 92, 1420–1447.
- JACOBY, H. G. & MINTEN, B. 2007. Is land titling in sub-Saharan Africa cost-effective? Evidence from Madagascar. *World Bank Economic Review*, 21, 461–485.
- JOHNSEN, S. 2004. The redefinition of family farming: Agricultural restructuring and farm adjustment in Waihemo, New Zealand. *Journal of Rural Studies*, 20, 419–432.
- JOHNSTON, B. R. (ed.) 2012. *Water, Cultural Diversity, and Global Environmental Change*. Dordrecht: UNESCO, Springer SBM.
- JOHNSTON, B. F. & MELLOR, J. W. 1961. The role of agriculture in economic development. *American Economic Review*, 51, 566–593.
- KEBEDE, B. 2006. Land reform distribution of land and institutions in rural Ethiopia: Analysis of inequality with dirty data. *Journal of African Economies*, 17, 550–577.
- KISAMBA-MUGERWA, W. 2005. The politics of and policies for smallholder agriculture. In: IFPRI, ODI & ICL (eds) *The Future of Small Farms: Proceedings of a Research Workshop*, Wye UK, 26–29 June. Washington, DC: International Food Policy Research Institute, pp. 269–282.
- KÖHLER-ROLLEFSON, I. 2000. *Management of Animal Genetic Diversity at Community Level*. Eschborn: GTZ.
- KÖHLER-ROLLEFSON, I. & MCCORKLE, C. 2004. Domestic animal diversity, local knowledge and stockraiser rights. In: BICKER, A., SILLITOE, P. & POTTIER, J. (eds) *Development and Local Knowledge: New Approaches to Issues in Natural Resources Management, Conservation and Agriculture*. New York: Routledge.
- KOPYTOFF, I. 1986. The cultural biography of things: Commoditization as process. In: APPADURAI, A. (ed.) *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge: Cambridge University Press.
- KVAKKESTAD, V. 2009. Institutions and the R&D of GM crops. *Ecological Economics*, 68, 2688–2695.
- LAMBTON, A. K. S. 1975. Review of ‘Land tenure among the Amhara of Ethiopia: The dynamics of cognatic descent’ by Allan Hoben. *Bulletin of the School of Oriental and African Studies*, 38, 425–427.
- LATHAM, J. 2012. How millions of farmers are advancing agriculture for themselves [Online]. Available at: <http://independentsciencenews.org/un-sustainable-farming/how-millions-of-farmers-are-advancing-agriculture-for-themselves/> [Accessed 16 January 2014].
- LAVE, J. & WENGER, E. 1991. *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.
- LEMESSA, D. 2001. *Khat (Catha edulis): Botany, distribution, cultivation, usage and economics in Ethiopia*. Addis Ababa: UN-Emergencies Unit for Ethiopia.
- LEWIS, H. S. 1974. Neighbors, friends, and kinsmen: Principles of social organization among the cushitic speaking peoples of Ethiopia. *Ethnology*, 13, 145–157.
- LEWIS, I. M. 2003. *Social and Cultural Anthropology in Perspective*. London: Transaction Publishers.
- LICHTFOUSE, E. 2011. *Alternative Farming Systems, Biotechnology, Drought Stress and Ecological Fertilisation*. Dordrecht: Springer.

- LONG, N. 1990. From paradigm lost to paradigm regained? The case for an actor-oriented sociology of development. *Revista Europea de Estudios Latinoamericanos y del Caribe/European Review of Latin American and Caribbean Studies*, 49, 3–24.
- LONG, N. 2001. *Development Sociology: Actor Perspectives*. London: Routledge.
- LONGWORTH, N. 2013. *Lifelong Learning in Action: Transforming Education in the 21st Century*. London and Sterling, VA: Kogan Page.
- LOUETTE, D. & SMALE, M. 2000. Farmers' seed selection practices and traditional maize varieties in Cuzalapa, Mexico. *Euphytica*, 113, 25–41.
- LOUETTE, D., CHARRIER, A. & BERTHAUD, J. 1997. In situ conservation of maize in Mexico: Genetic diversity and maize seed management in a traditional community. *Economic Botany*, 51, 20–38.
- MALLERY, G. 1888. Manners and meals. *American Anthropologist*, 1, 193–208.
- MANN, H. S. 1965. *Land tenure in Chore (Shoa): A pilot study*. Monographs in Ethiopian Land Tenure No. 2. Addis Ababa: Institute of Ethiopian Studies.
- MARCUS, G. E. 1995. Ethnography in/of the world system: The emergence of multi-sited ethnography. *Annual Review of Anthropology*, 24, 95–117.
- MARKAKIS, J. 1975. *Ethiopia: Anatomy of a Traditional Polity*. Oxford: Oxford University Press.
- MATSON, P. A., PARTON, W. J., POWER, A. & SWIFT, M. 1997. Agricultural intensification and ecosystem properties. *Science*, 277, 504–509.
- MAUSS, M. 1969. *The Gift: Forms and Functions of Exchange in Archaic Societies*. London: Cohn and West.
- MAZUR, B., KREBBERS, E. & TINGEY, S. 1999. Gene discovery and product development for grain quality traits. *Science*, 285, 372–375.
- MCGUIRE, S. J. 2008. Securing access to seed: Social relations and sorghum seed exchange in Eastern Ethiopia. *Human Ecology*, 36, 217–229.
- MCMILLAN, D. E. & HARLOW, J. 1991. *Anthropology and Food Policy: Human Dimensions of Food Policy in Africa and Latin America*. Athens, GA: University of Georgia Press.
- MENGISTEAB, K. 1990. *Failure of Land Reform and Agricultural Crisis*. Westport, CT: Greenwood Press.
- MINTZ, S. W. & BOIS, C. M. D. 2002. The anthropology of food and eating. *Annual Review of Anthropology*, 31, 99–119.
- MOLVAER, R. K. 1980. *Tradition and Change in Ethiopia: Social and Cultural Life as Reflected in Amharic Literature ca 1930–1974*. Leiden: E.J. Brill.
- MOSSE, D. 2001. 'People knowledge', participation and patronage: Operation and representations in rural development. In: COOKE, B. & KOTHARI, U. (eds.) *Participation: The New Tyranny?* New York: Zed Books.
- MULATU, B. & GRANDO, S. 2006. Barley Research and Development in Ethiopia. The Second National Barley Research and Development Review Workshop, 28–30 November, Holetta-Ethiopia. Ethiopian Institute of Agricultural Research (EIAR) and International Center for Agricultural Research in the Dry Areas (ICARDA).
- MZOUGH, N. 2011. Farmers' adoption of integrated crop protection and organic farming: Do moral and social concerns matter? *Ecological Economics*, 70, 1536–1545.
- NASH, M. J. 1985. *Crop Conservation and Storage in Cool Temperate Climates*. Oxford: Pergamon Press.
- NAYLOR, R., FALCON, W., FOWLER, C. & AGGARWAL, P. 2007. The conservation of global crop genetic resources in the face of climate change. *Summary Statement from a Bellagio Meeting*. The Rockefeller Foundation and The Kendall Foundation.
- NETTING, R. M. 1993. *Smallholders, Householders: Farm Families and the Ecology of Intensive, Sustainable Agriculture*. Stanford, CA: Stanford University Press.
- NEWING, H. 2011. *Conducting Research in Conservation: A Social Science Perspective*. New York: Routledge.
- NONAKA, I. & TOYAMA, R. 2003. The knowledge-creating theory revisited: Knowledge creation as a synthesizing process. *Knowledge Management Research & Practice*, 1, 2–10.

- OCHOLLA, D. 2007. Marginalized knowledge: An agenda for indigenous knowledge development and integration with other forms of knowledge. *International Review of Information Ethics*, 7, 2–10.
- OHNO, K. 2009. *Ethiopia: Political Regime and Development Policies*. Tokyo: Graduate Institute.
- OLDFIELD, M. L. & ALCORN, J. B. 1987. Conservation of traditional agroecosystems. *BioScience*, 37, 199–208.
- OOSTERHOUT, S. V. 1996. What does in situ conservation mean in the life of a small-scale farmer? Examples from Zimbabwe's communal areas. In: Sperling, L. & Loevinsohn, M. (eds.) *Using Diversity-Enhancing and Maintaining Genetic Resources On-Farm*. Ottawa: IDRC.
- ORLOVE, B. 2002. *Lines in the Water*. Berkeley, CA: University of California Press.
- ORLOVE, B. S. & BRUSH, S. B. 1996. Anthropology and the conservation of biodiversity. *Annual Review of Anthropology*, 25, 329–352.
- OTTAWAY, M. 1977. Land reform in Ethiopia 1974–1977. *African Studies Review*, 20, 79–90.
- PALMERI, P. 1979. Traditional lifeways and modernization: Social transformation in a Niger village. In: Berdichewsky, B. (ed.) *Anthropology and Social Change in Rural Areas*. The Hague: Mouton Publishers, pp. 49–65.
- PAUSEWANG, S. 1983. *Peasants, Land and Society: A Social History of Land Reform in Ethiopia*. Munich: Welt forum Verlag.
- PEACOCK, C., JOWETT, A., DORWARD, A., POULTON, C. & UREY, I. 2004. *Reaching the Poor: A Call to Action: Investment in Smallholder Agriculture in Sub-Saharan Africa*. London: FARM-Africa.
- PETERS, P. E. 2004. Inequality and social conflict over land in Africa. *Journal of Agrarian Change*, 4, 269–314.
- PIMENTEL, D., STACHOW, U., TAKACS, D. A., BRUBAKER, H. W., DUMAS, A. R., MEANEY, J. J., JOHN, A. S., ONSI, D. E. & CORZILIUS, D. B. 1992. Conserving biological diversity in agricultural/forestry systems. *BioScience*, 42, 354–362.
- PINSTRUP-ANDERSEN, P. & SCHIOLER, E. 2001. *Seeds of Contention: World Hunger and the Global Controversy over GM Crops*. Baltimore, MD: Johns Hopkins University Press.
- POUND, B. & JONFA, E. 2005. *Soil Fertility Practices in Wolaita Zone, Southern Ethiopia: Learning from Farmers*. London: FARM-Africa.
- PURI, R. J. 2011a. Participant observation. In: NEWING, H. (ed.) *Conducting Research in Conservation: A Social Science Perspective*. New York: Routledge, pp. 85–97.
- PURI, R. J. 2011b. Documenting local environmental knowledge and change. In: NEWING, H. (ed.) *Conducting Research in Conservation: A Social Science Perspective*. New York: Routledge, pp. 146–169.
- RAHMATO, D. 1993. Agrarian change and agrarian crisis: State and peasantry in post-revolution Ethiopia. *Africa: Journal of the International African Institute*, 63, 36–55.
- REMINICK, R. A. 1976. The symbolic significance of ceremonial defloration among the Amhara of Ethiopia. *American Ethnologist*, 3, 751–763.
- RICHARDS, P. 1990. Local strategies for coping with hunger: Central Sierra Leone and Northern Nigeria compared. *African Affairs*, 89, 265–275.
- RIVIERA, D. 2010. Handling qualitative data: A review. *The Qualitative Report*, 15, 1300–1303.
- RÖLING, N. G., HOUNKONNOU, D., OFFEI, S. K., TOSSOU, R. & VAN HUIS, A. 2004. Linking science and farmers' innovative capacity: Diagnostic studies from Ghana and Benin. *NJAS – Wageningen Journal of Life Sciences*, 52, 211–235.
- RUBEN, R. 2005. Smallholder farming in less-favored areas: Options for pro-poor and sustainable livelihoods. In: IFPRI, ODI & ICL (eds) *The Future of Small Farms: Proceedings of a Research Workshop*, Wye UK, 26–29 June. Washington, DC: International Food Policy Research Institute, pp. 83–98.
- SCOTT, J. C. 1985. *Weapons of the Weak: Everyday Forms of Peasant Resistance*. New Haven, CT: Yale University Press.
- SHARP, K., DEVEREUX, S. & AMARE, Y. 2003. Destitution in Ethiopia's Northeastern Highlands (Amhara National Regional State): A policy research project. Institute of Development Studies, University of Sussex, Brighton.

- SHIPTON, P. & GOHEEN, M. 1992. Introduction: Understanding African land-holding: Power, wealth, and meaning. *Africa: Journal of the International African Institute*, 62, 307–325.
- SHIVA, V. 2001. *Stolen Harvest: The Hijacking of the Global Food Supply*. London: Zed.
- SHIVA, V. & KRISHNAN, P. 1995. *The Seed Keepers*. New Delhi: Navdanya.
- SILLITOE, P. 1998. The development of indigenous knowledge: A new applied anthropology. *Current Anthropology*, 38, 223–252.
- SILLITOE, P. 2007. *Local Science vs Global Science: Approaches to Indigenous Knowledge in International Development*. New York: Berghahn Books.
- SILLITOE, P., BARR, J. & ALAM, M. 2004. Sandy-clay or clayey-sand? Mapping indigenous and scientific soil knowledge on the Bangladesh floodplains. In: BICKER, A., SILLITOE, P. & POTTIER, J. (eds) *Development and Local Knowledge: New Approaches to Issues in Natural Resources Management, Conservation and Agriculture*. New York: Routledge.
- SKELTON, T. & ALLEN, T. (eds) 1999. *Culture and Global Change*. London: Routledge.
- SMITH, W. R. 1894. *Religion of the Semites*, London: Transaction Books.
- SPERLING, L. & COOPER, H. D. 2004. Understanding seed systems and strengthening seed security: a background paper. In: SPERLING, L., OSBORN, T. & COOPER, H. D. (eds) *Towards Effective and Sustainable Seed Relief Activities*. FAO Plant Production and Protection Paper 181. Rome: FAO.
- SPIERTZ, H. 2010. Food production, crops and sustainability: Restoring confidence in science and technology. *Current Opinion in Environmental Sustainability*, 2, 439–443.
- STAHLER, G. J. & COHEN, E. 2000. Using ethnographic methodology in substance abuse treatment outcome research. *Journal of Substance Abuse Treatment*, 18, 1–8.
- STRANG, V. 2004. Indigenous knowledge and relations to land. In: BICKER, A., SILLITOE, P. & POTTIER, J. (eds.) *Development and Local Knowledge: New Approaches to Issues in Natural Resources Management, Conservation and Agriculture*. New York: Routledge.
- SUCHITTA, P. 1989. Traditional technology as a culture-environment relationship in Thailand. In: THE SIAM SOCIETY (ed.) *Culture and Environment in Thailand*. Bangkok: The Siam Society.
- SUCHMAN, L. A. 1987. *Plans and Situated Actions: The Problem of Human-Machine Communication*. Cambridge: Cambridge University Press.
- TESHOME, A. 2006. Agriculture, growth and poverty reduction in Ethiopia: Policy processes around the new PRSP (PASDEP). Research paper.
- TESHOME, A., FAHRIG, L., TORRANCE, J. K., LAMBERT, J. D., ARNASON, T. J. & BAUM, B. R. 1999. Maintenance of serghum (sorghum bicolor, Poaceae) landrace diversity by farmers' selection in Ethiopia. *Economic Botany*, 53, 79–88.
- TOMMASOLI, M. 1996. Traditional institutions, social change and development in post-conflict Ethiopia. *Africa: Rivista trimestrale di studi e documentazione dell'Istituto italiano per l'Africa e l'Oriente*, 51, 563–586.
- VAUGHAN, S. & TRONVOLL, K. 2003. *The Culture of Power in Contemporary Ethiopian Political Life*. Stockholm: Swedish International Development Cooperation Agency.
- VISSOH, P. V., GBÈHOUNOU, G., AHANCHÉDÉ, A., KUYPER, T. W. & RÖLING, N. G. 2004. Weeds as agricultural constraint to farmers in Benin: Results of a diagnostic study. *NJAS – Wageningen Journal of Life Sciences*, 52, 305–329.
- WATTS, H. W. 1968. *An economic definition of poverty* [Online]. Institute for Research on Poverty. Available at: www.ssc.wisc.edu/irpweb/publications/dps/pdfs/dp568.pdf [Accessed 26 November 2013].
- WELLMAN, B. & WORTLEY, S. 1989. Brothers' keepers: Situating kinship relations in broader networks of social support. *Sociological Perspectives*, 32, 273–306.
- WHO 2005. *Ecosystems and Human Well-Being: Synthesis. A Report of the Millennium Ecosystem Assessment*. Geneva: World Health Organization.
- WILSON, G. A. 2012. Community resilience, globalization, and transitional pathways of decision-making. *Geoforum*, 43, 1218–1231.
- WOREDE, M. 2011. Establishing a Community Seed Supply System: Community Seed Bank. *Third World Resurgence*. Third World Network.

YARROW, T. 2008. Negotiating difference: Discourses of indigenous knowledge and development in Ghana. *PoLAR: Political and Legal Anthropology Review*, 31, 224–242.